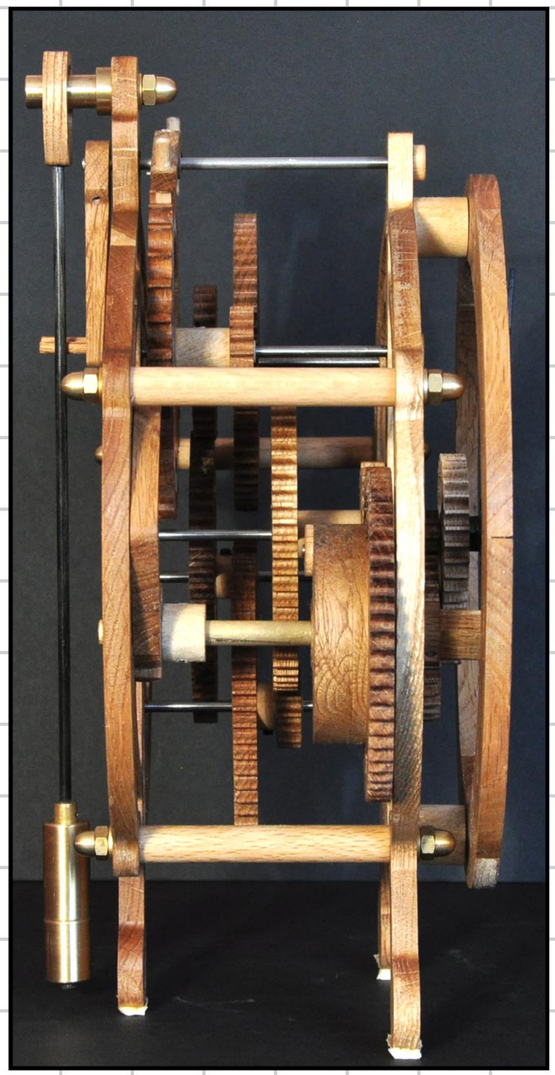
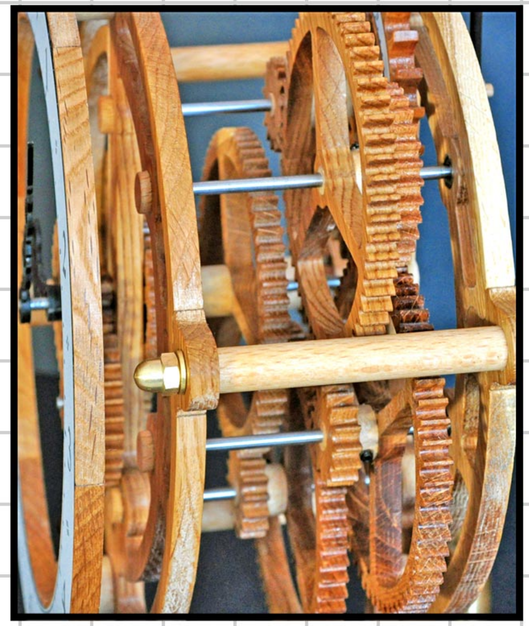


This clock follows the design lead of Clock 12 and uses a windup spring drive insead of the traditional weight. This time instead of following the minimalist route of Clock 12 the design incorporates the gear train uses the compact design originally used in Clock 9 to give a densly packed clock with lots of visual interest. The framework use to support the workings is kept to the minimum to allow more visibility to of the gears.

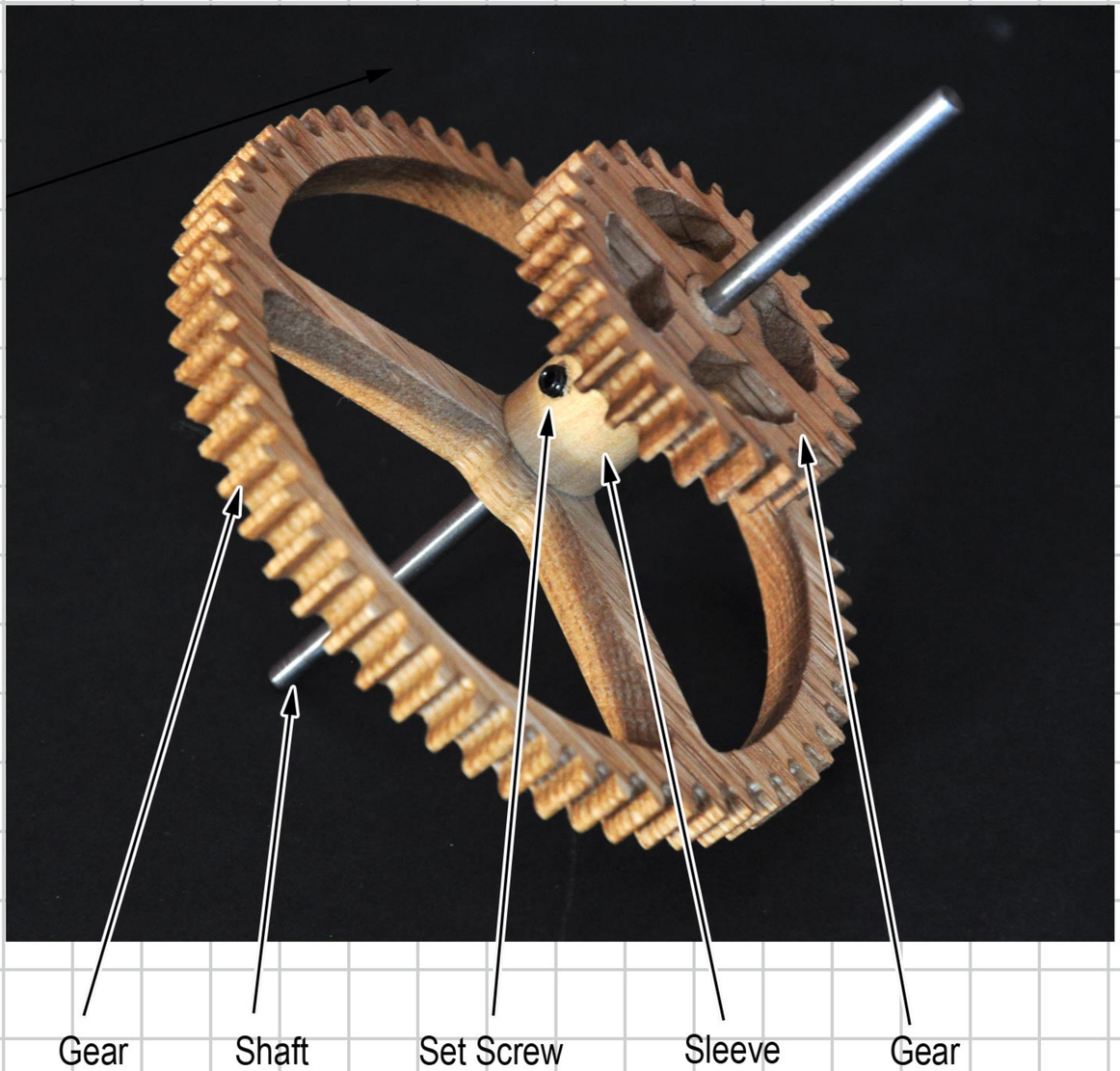
To ensure the minimum of friction in the design Ball races are fitted to all the shaft pivots and a lightweight pendulum has been introduced to reduce impulse load necessary to keep the clock working to the minimum.

The escapement and the pendulum work together to control the clock. Without them the clock would spin freely and run down in in a couple of minutes.
The pendulum swings backward and forward at a rate of 1/2 second per swing, and with 30 teeth on the escape wheel and two pallets swing in and out to arrest the movement the escape wheel will rotate completely in 30 seconds
Adjusting the pallets so they engage equally with each pendulum motion is key to getting the clock to run continuously.

I have used a laser engraved dial set into the recess on the front of the Dial as it gives an excellent looking dial and relatvely inexpensive at $15.
The driving spring is contained within the spring gear case and is held onto the Arbor with a short hook. Turning the Arbor with the winding key winds the spring, the ratchet and pawl mounted at the rear stop it unwinding. The gear on the outside of the spring case drives the next gear on the mainshaft to provide the main driving force for the clock.
The hour gears are a set of 4 gears driven by the mainshaft to reduce the rotation by 12 to 1 so driving the hour hand around.



The gear train on this clock comprises 6 shafts containing the engaging gears, it starts with the shaft containing yjr spring that drives the mainshaft which then passes the power through the rest of the gear train to the shaft holding the timing wheel, and this is controled by the escapement at the top of the clock



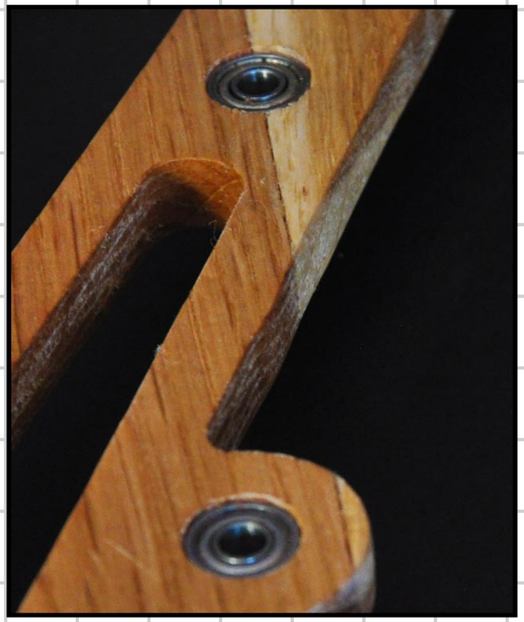
The gear assembly shown here is typical for all the gear assemblies in the clock.
The construction is in 4 steps :-
Make the parts The Gear, the Shaft and the Sleeve. The Sleeve is to be made with some material left on the dia where the gear is going to be mounted.

Tap and thread the sleeve to accept the Ø4 set screw and then fit the sleeve to the shaft and tighten it in place with the set screw.

Mount the shaft in the headstock of the lathe and the other end support on a running centre, then turn the sleeve to the final diameter to ensure a tight fit with the gears. This process is not absolutely necessary, but does ensure that gear will run true on the shaft.

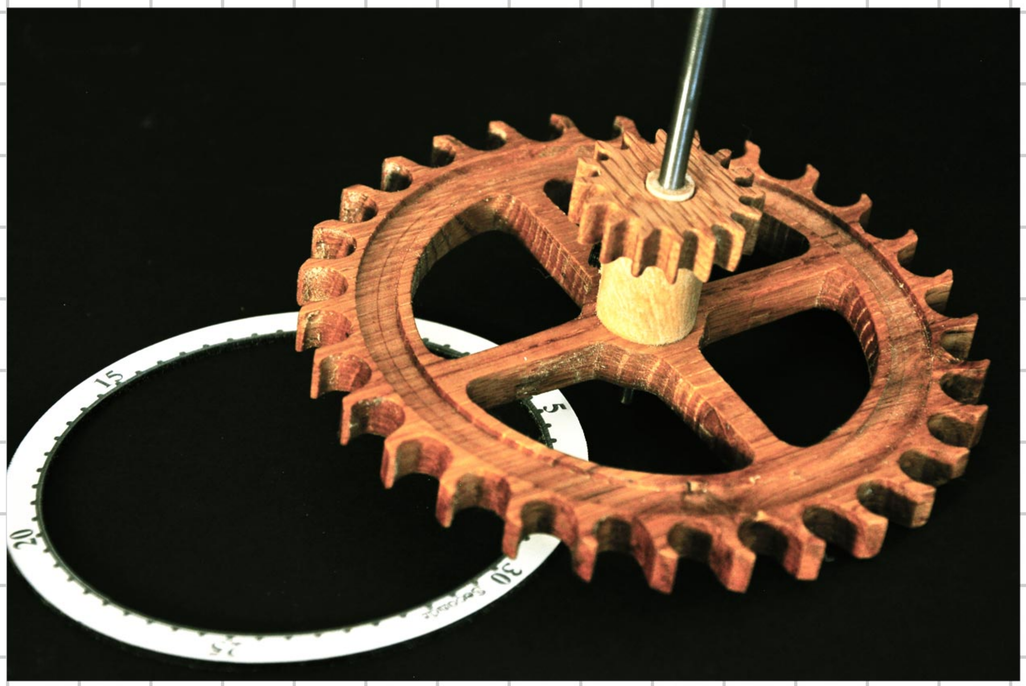
Glue or screw the gears to the Sleeve.

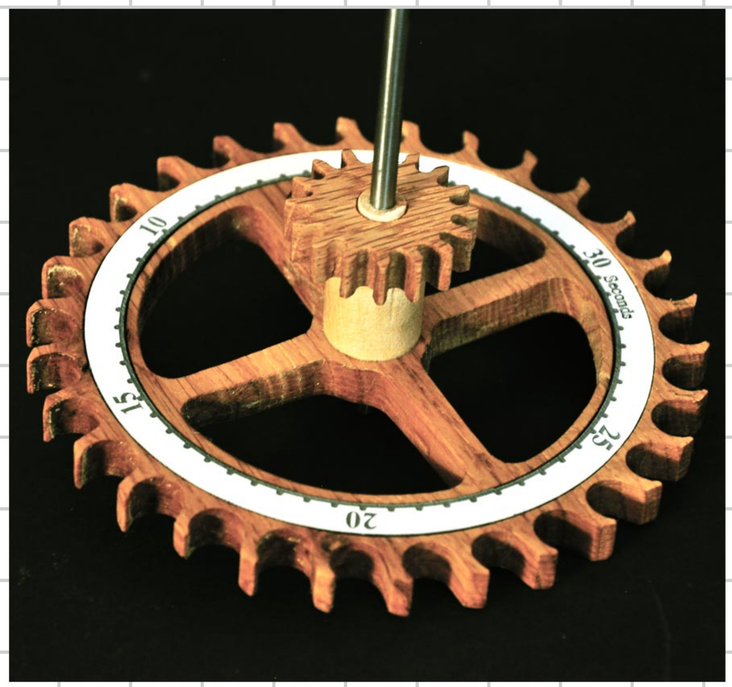
Now you can mount the gear trains into the clock.



Fit bearings into front and back panels

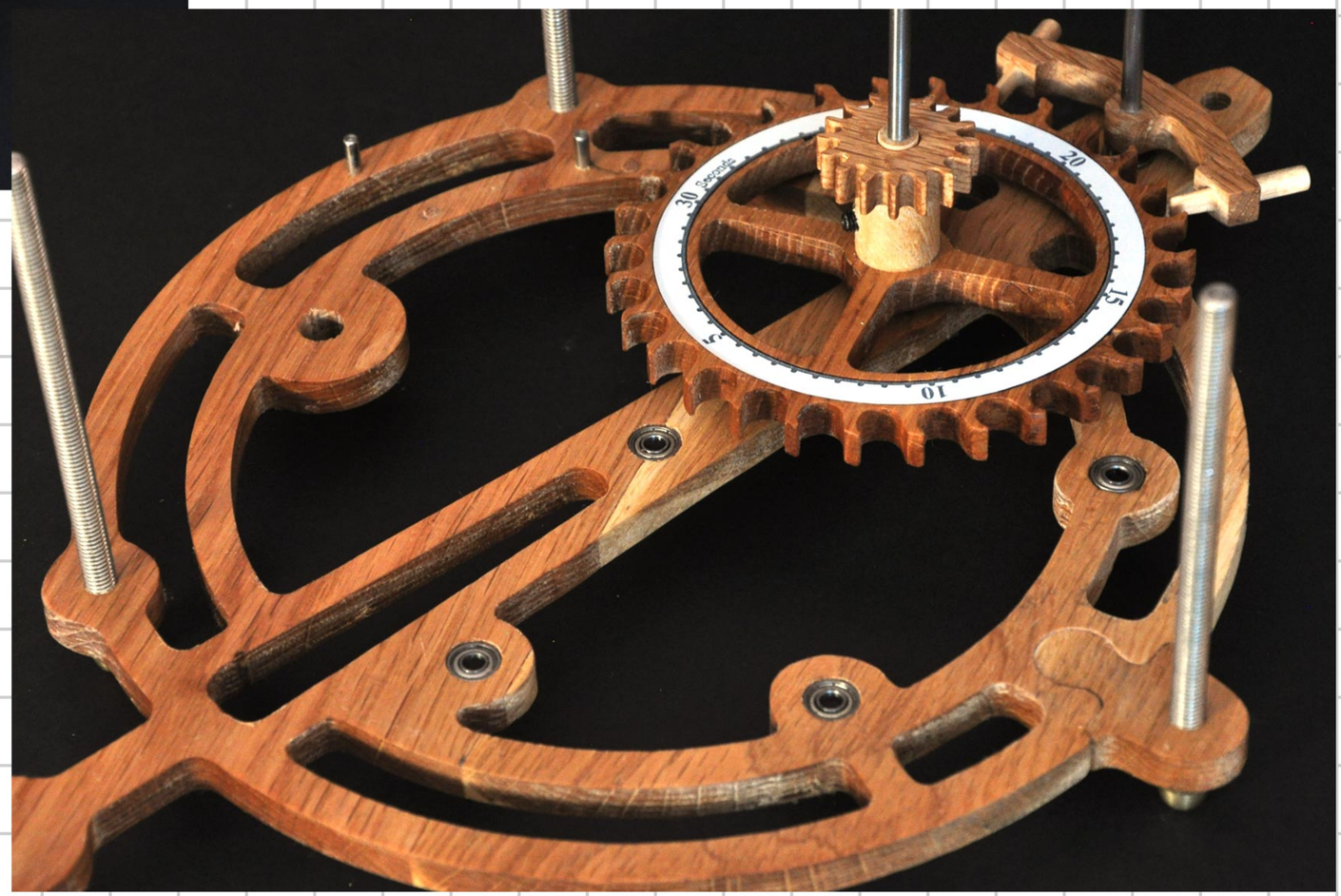
Assemble the Escapement and pallets to its shaft and initially set the protrusion of the pallets to the dimensions on the drawing, then fit to back panel.

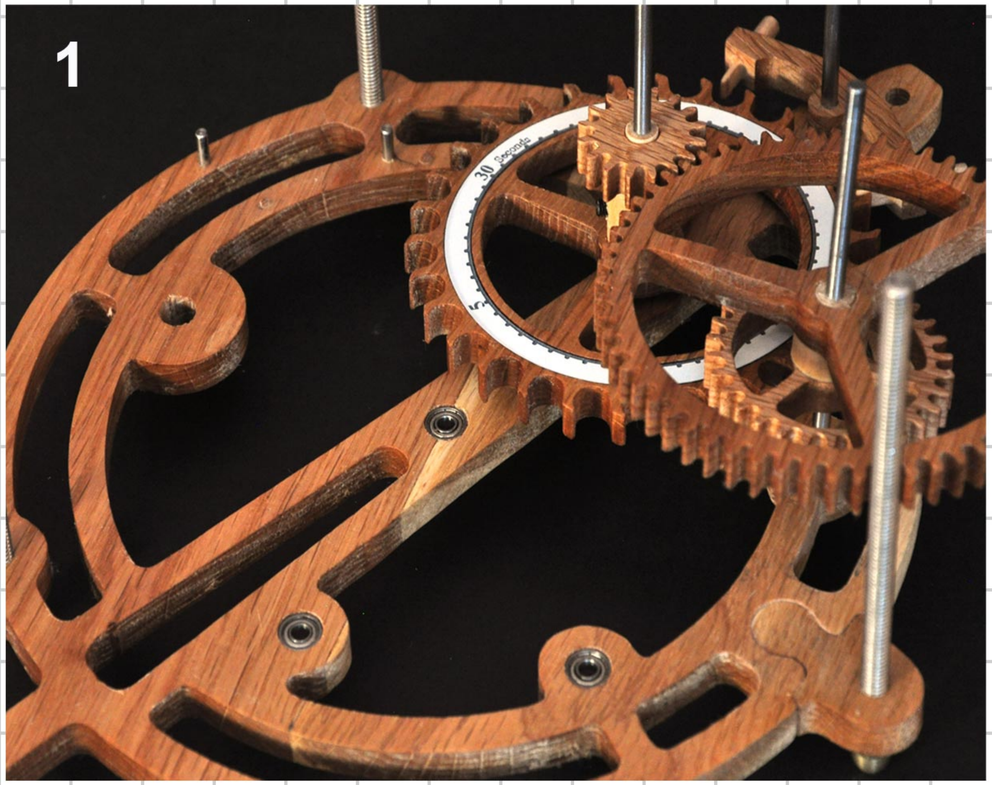




The timing or escape wheel on this clock is am little different in that it turns a complete revolution in 30 seconds not 60, so to make this clear and add more visual interest I have included a circular recess to fit a scale showing the 30sec dial. I have made this in the same way as the maindial by engaving into white plastic and the gluing it into the recess

Wth the bearings,threaded rod and Domed nuts and washers fitted to the back board , we can start to fit the gear trains.

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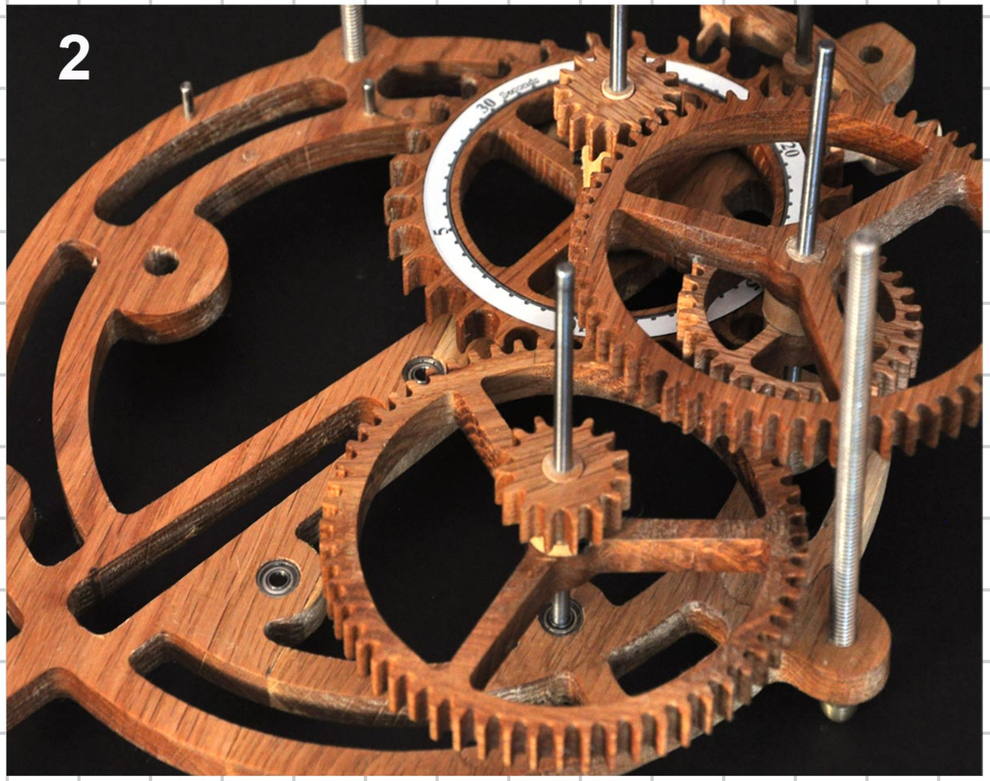
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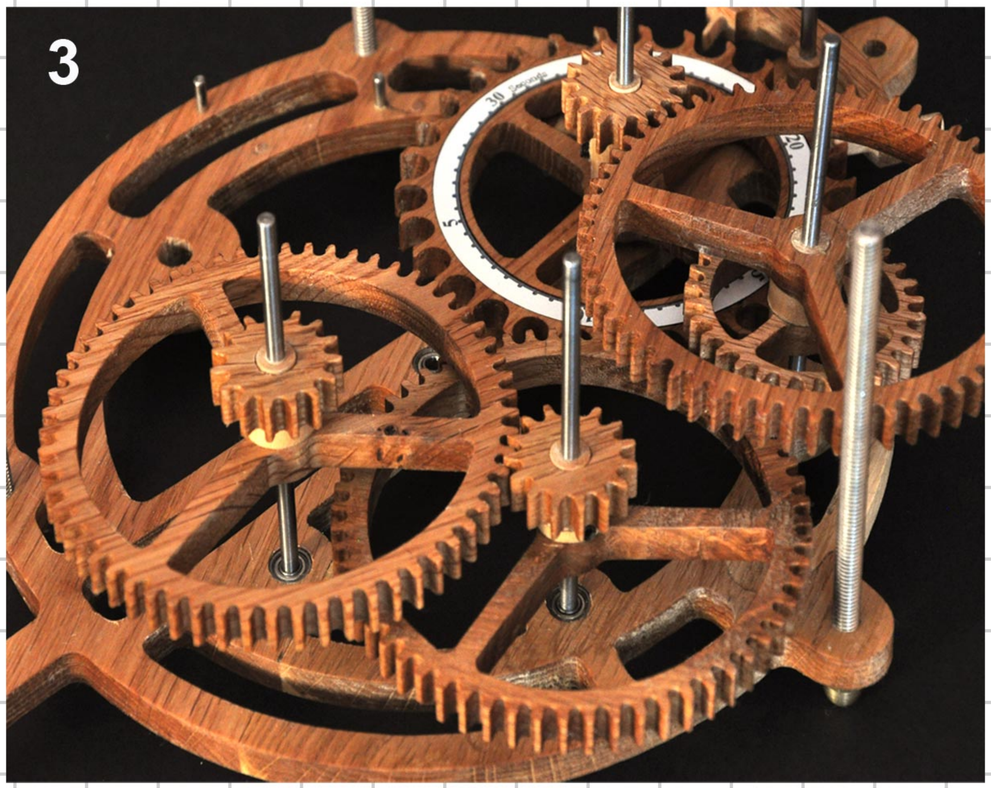
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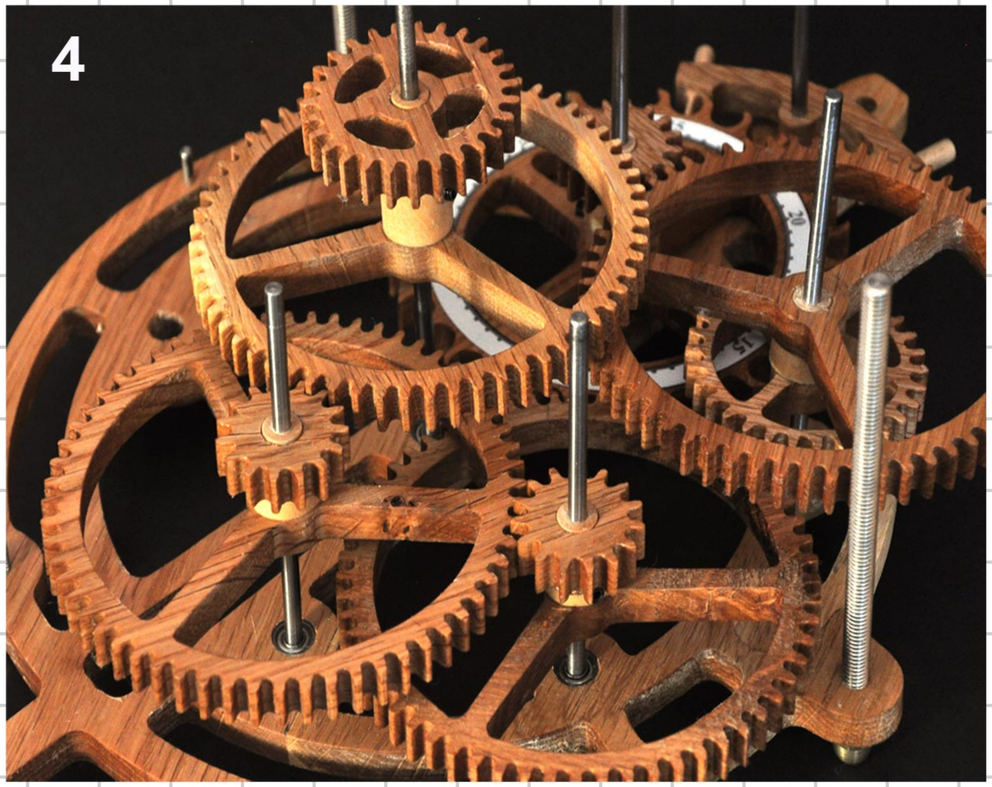
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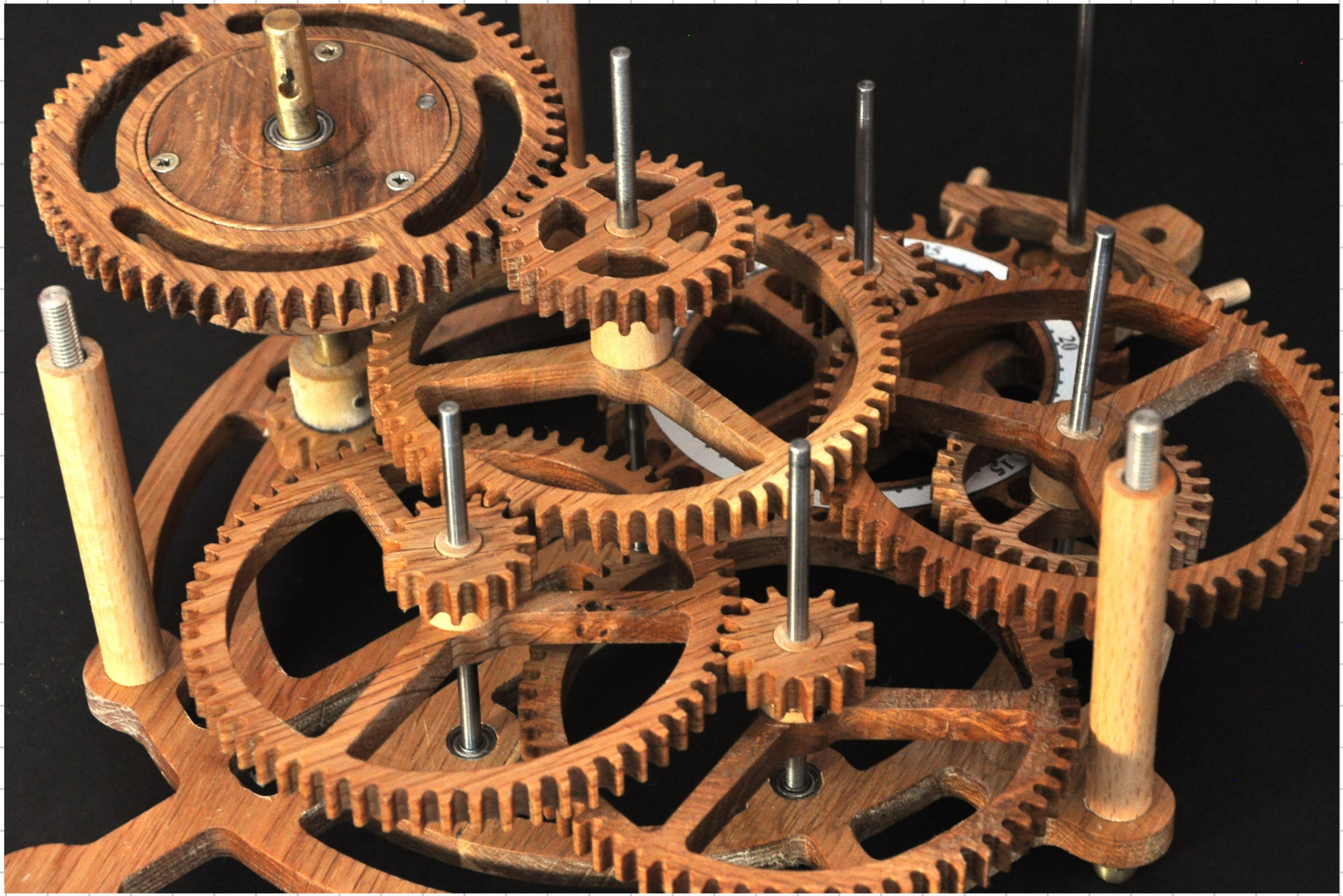
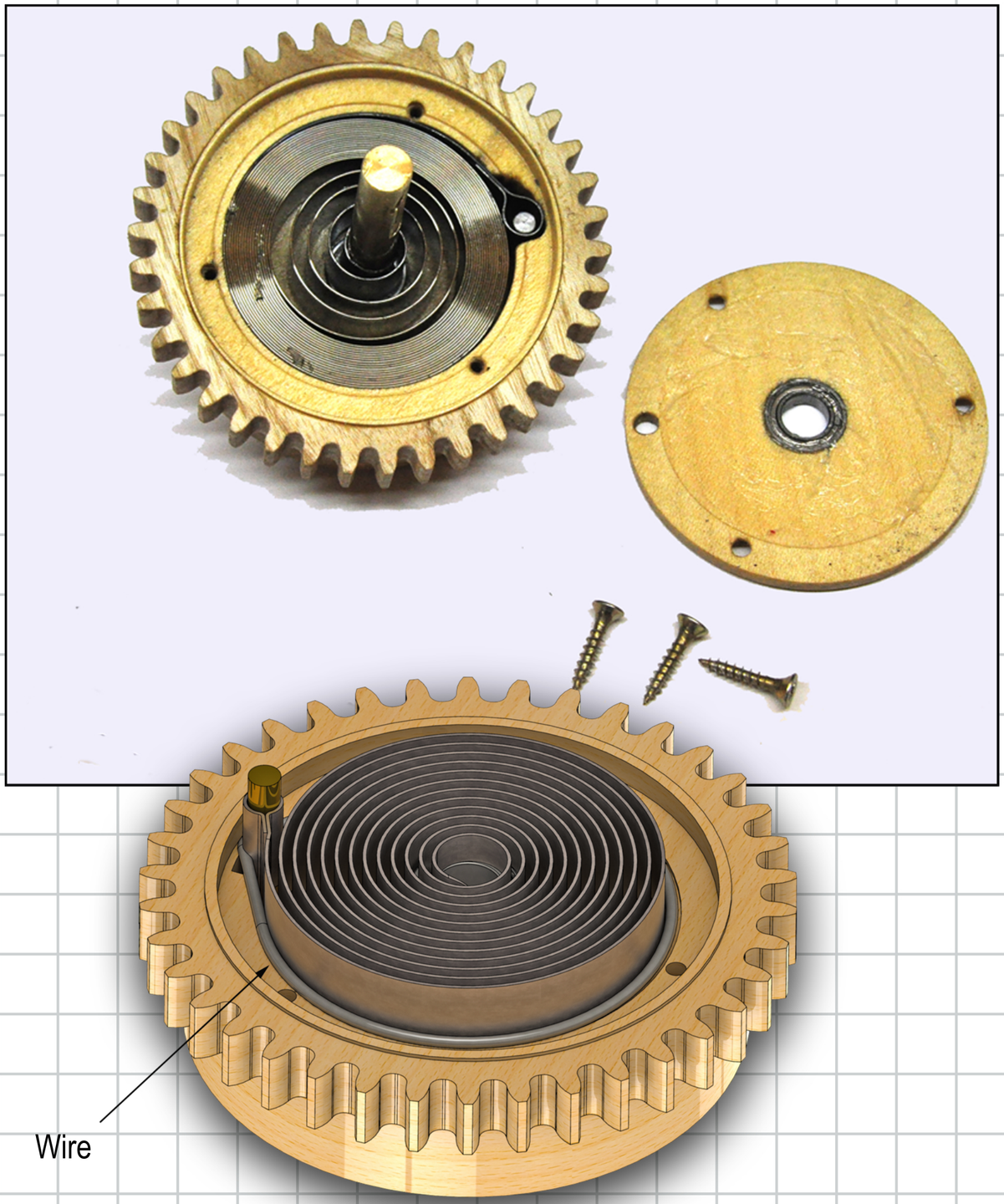
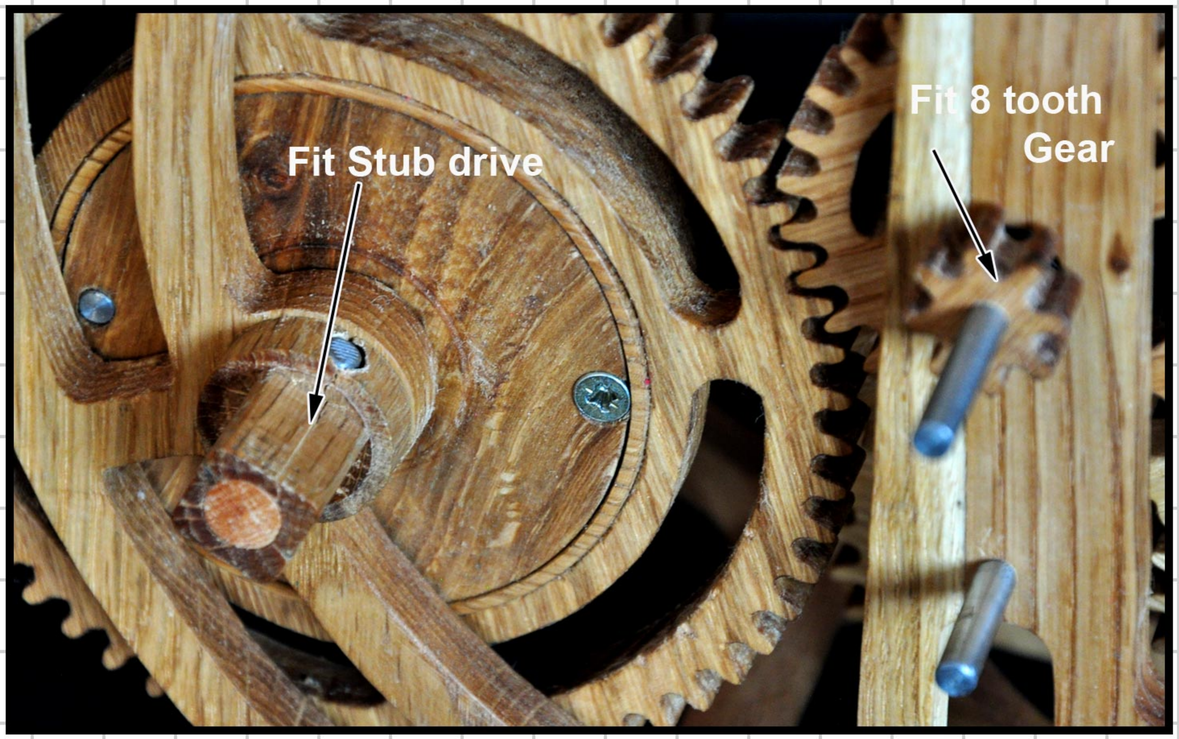




These internal images are of the spring case for Clock 12, which apart from the size of the spring and the outer gear are the same as for Clock 14.The spring used here is an Ansconia ANS1650 and it comes wrapped in wire and has a loop at one end. To fit the spring lay it in the Spring Case as shown with the wire supporting it and the loop over the pin. Now push down steadily untill the spring pops through the wire and expands into its socket. Remove the spring and then push fully home.

Now fit the Arbor by pushing it into the central hole of the spring and twisting anti-clockwise at the same time untill the small hook on the arbor engages into the short central slot in the center of the spring. Once that is secure, fit the cover

Fit the front board using the Domed nuts and washers. Make sure to hold the frames squarely on there feet and tighten nuts securely as the front and back boards will twist when the spring is wound and lock up the gear train.



This shows the pawl fitted to engae with the ratchet

Fitthe Pendulum support so that the notch in the top is centered. Mount the Pendulum assembly ensuring it hangs vertically with the pivot fitting centrally in the notch

Finally fit the dial and the hands