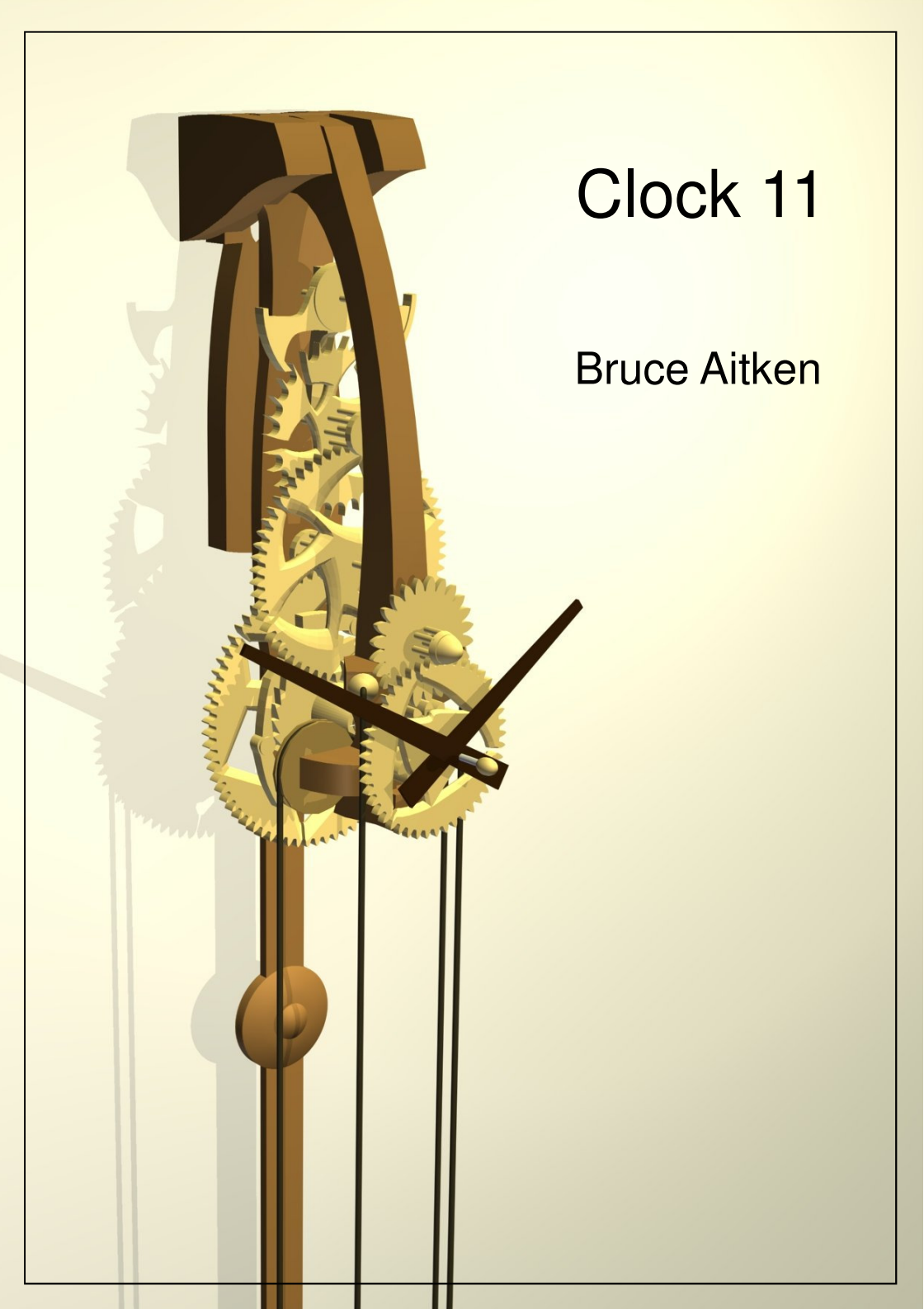

Clock 11

Bruce Aitken

This user manual accompanies one of the ‘Clock 11’ series of clocks designed and made by Bruce Aitken.

Written, published, printed and bound by Bruce Aitken, Old Tram Depot Studio, 25 Rutland Street, Matlock DE4 3GN.
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Contents

Preliminaries

Before starting to unpack and install the clock, please gather the following items:

- An old towel, blanket or similar
- A pillow
- A crosshead screwdriver
- An decent electric drill and drill bits suitable for drilling into the type of wall the clock will be fixed to (see page 5).
- The wearing of baggy sweaters and sleeves is strongly discouraged during the fitting of the clock as the delicate wheels have been known to snag on such garments

A Suitable Location for the Clock

The clock can be successfully located in many settings, however a few simple precautions need to be taken:

- The clock protrudes from the wall by nearly 200mm (8 inches) and is delicate. It must be placed so as to exclude the chance of someone accidentally brushing against it.

- The clock needs clear space beneath it for the weight to fall; it also looks at its best if it has a good deal of empty wall around it.

- The wall it is mounted on does need to be vertical. If your wall is wonky the clock can be modified to suit - we will have discussed this before your purchase. You may find upon installation that your chosen wall is less vertical than you had thought - if so please contact me so I can provide you with a modification kit tailored to your needs.

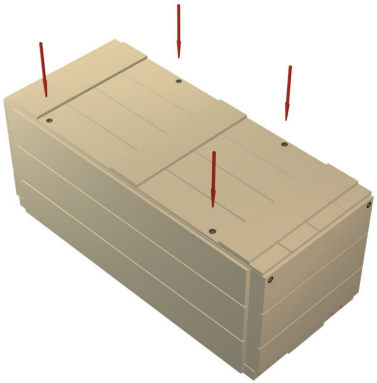
- The clock is susceptible to temperature changes (gradual changes affect timekeeping; frequent, sudden and extreme swings in temperature can damage the clock). For this reason the clock should be placed away from radiators. If the clock can be kept in environment with a broadly even temperature, so much the better.

- Significant draughts can affect the clock badly, interfering with the swing of the pendulum. A hallway is a poor location for the clock, being exposed to gusts of outside air when the door is opened.

- The clock does, of course, make a noise. It has a pleasant slow tick - tock that many find relaxing. Some people find that they cannot easily sleep in a room with a ticking clock, others enjoy the sound. If you enjoy listening seriously to music in your home, you may wish to keep the clock apart from the Hi-Fi.

Opening the Crate

The crate that contains your clock is a singularly scruffy bit of woodwork. Please protect the surface you intend to place the crate upon by spreading an old towel first. To open the crate a medium crosshead screwdriver is required.

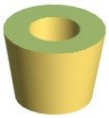


Remove the four screws securing the lid, and remove it.

Locate and set aside the bag containing the drive cord, the mounting peg and the pendulum joining peg.

The mounting peg will be needed as soon as the correct wall fixing has been decided upon and a suitable hole has been drilled in the wall.

Pendulum Joining Peg



Mounting Peg

The clock hangs from a single screw which must be firmly fixed into the wall.

The mounting hole should drilled at roughly eye level.

A selection of screws, plugs and other fixings is provided with the clock - you will need to choose the appropriate one to suit your wall. If after reading the following you are unsure of how to proceed, please contact me.

Drilling the Mounting Hole

Sound brick or stone walls

A well secured 50mm x 4mm (2” x 8) screw will hold the clock admirably in walls of this nature. Use a 6mm masonry drill bit to drill the hole in the wall to a depth of 55mm (a bit of masking tape round the drill bit will give you the right depth).

Be aware of how well the drill goes in - the plaster layer is drilled very easily and the drill can wander before it meets the brick below. It should encounter decent resistance when it reaches the brick - if not you may have found a mortar join which could be quite weak. It also is possible that the wall has deteriorated; in either case it is not wise to hang the clock here.

If the wall proves to be sound, tap the red plastic wall plug fully into place, slip the screw through the wooden mounting peg and screw it to the wall, making sure it is solidly held and can't be rotated.

Stud walls (plasterboard over a wooden frame)

Try to locate one of the vertical wooden ‘studs’ by tapping on the wall. Fixing the clock to one of these is straightforward and reliable, if you find one in a good position.

Drill a hole with a 2.5mm twist drill bit, and use the 50mm x 4mm (2” x 8) screw to hold the mounting cone securely to the wall.

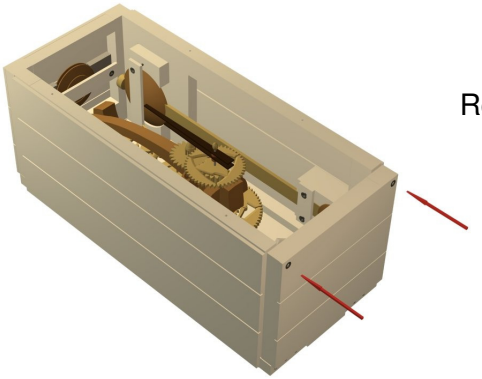
If you are unable to find a suitable stud, you will need to use the cavity wall fixing. You have been provided with an M3 x 50mm toggle fixing which you will have to unscrew, slide the mounting peg onto and reassemble. A 10mm drill bit will be needed to make the hole in the plaster board.

Lath and plaster walls

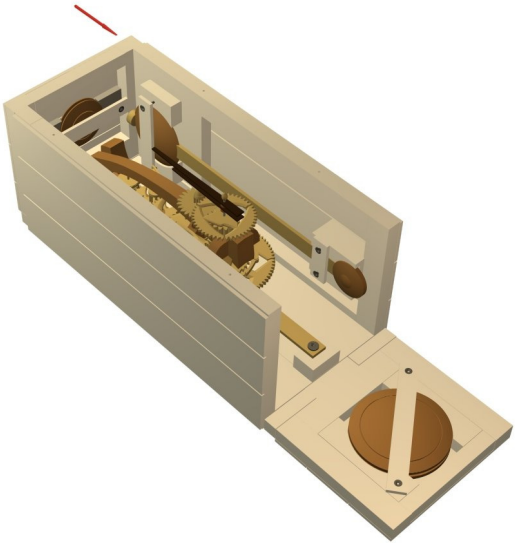
Walls of this type are old and may well be weak. If you are confident in yours use the M3 x 50mm toggle fixing as above, but take great care to ensure that the arms open vertically so they can grip the laths well.

Unpacking the Clock

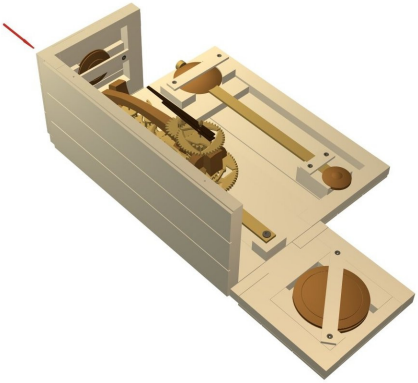
Remove the parts one by one when you are ready to fit them. You'll need a screwdriver to remove the individual parts from the crate - be sure to put any detachable parts of the packaging back in place before they are lost. The empty crate can be stored flat or rebuilt into its original shape.



Remove the two screws indicated to allow this end of the crate to fold down (this end holds the weight, and is quite heavy).

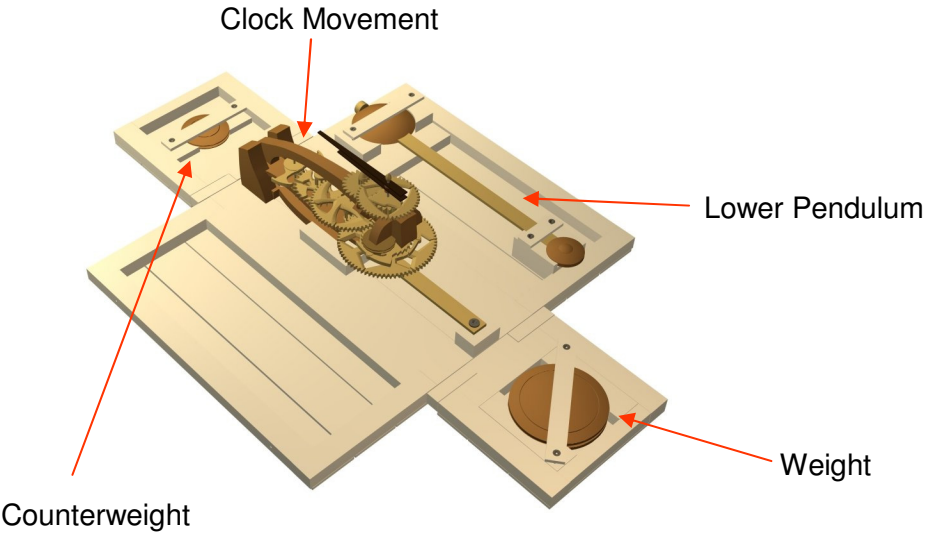


Now remove the single screw (indicated) and fold down the side of the crate.



And now remove the final screw - be aware that this screw holds the last two sides of the crate in place, which should be lowered simultaneously.

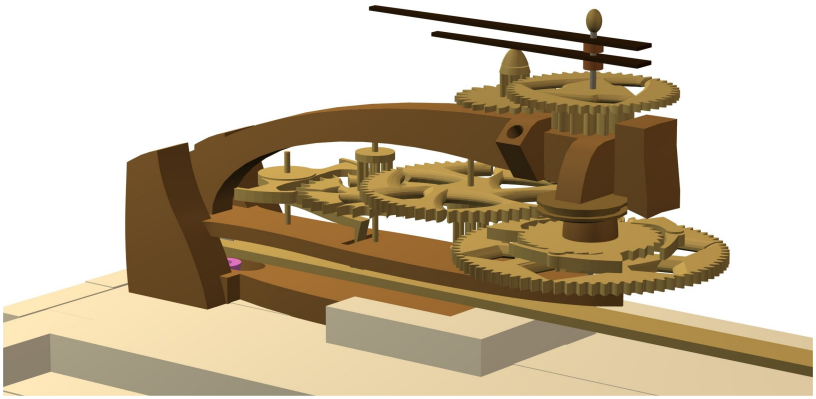
The Opened Crate and its Contents

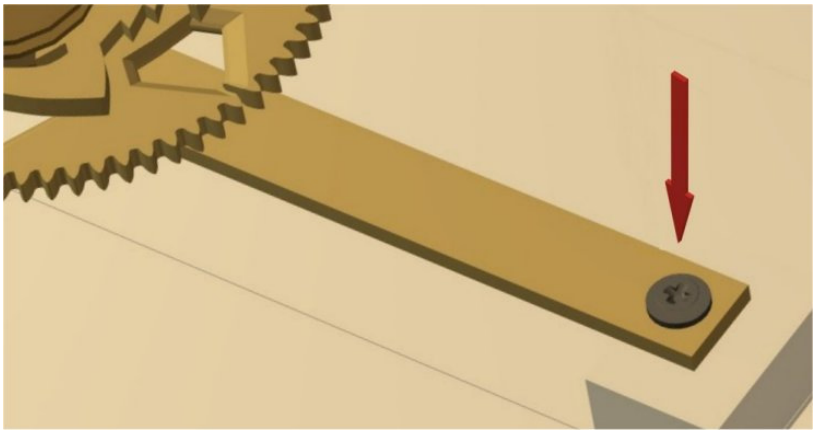


Removing and Handling the Clock

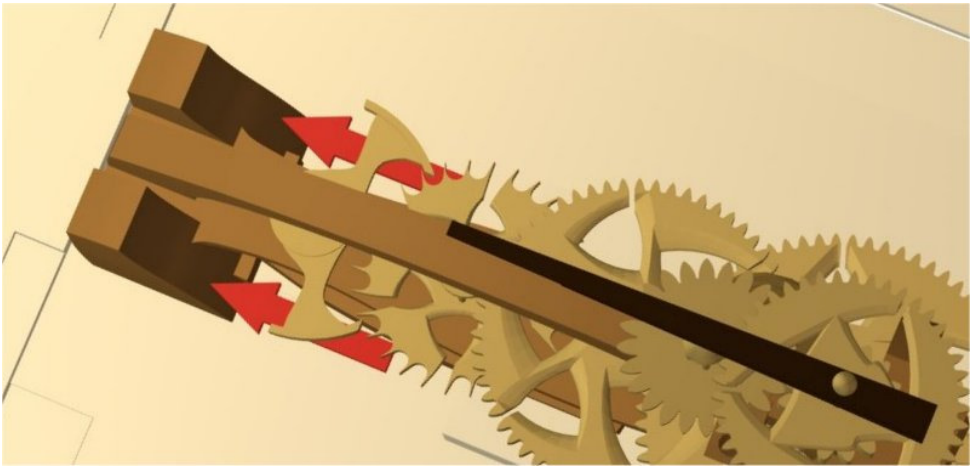
The main body of the clock is robust but needs to be removed from the crate carefully.

The clock is held in place in the crate on a mounting peg similar to the one now fixed to the wall. The clocks back plate is held firmly in a foam lined wooden block to prevent movement while in transit.



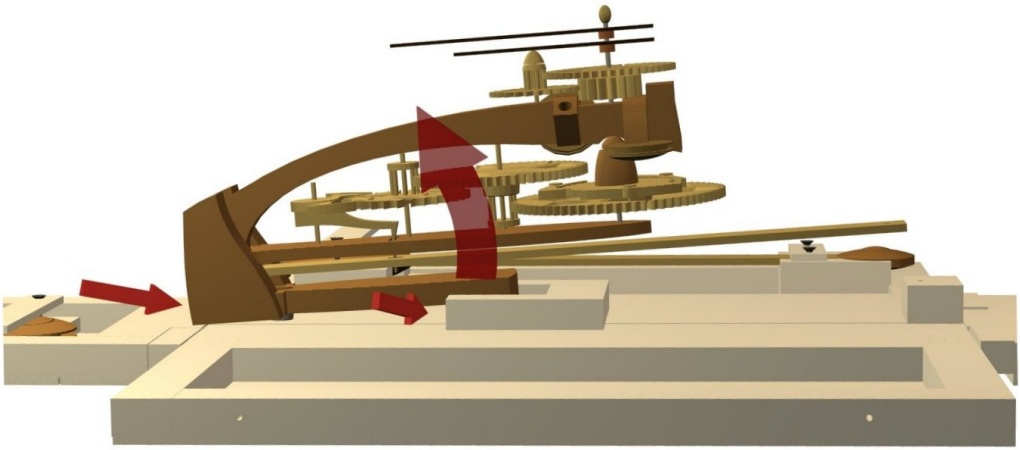


The upper pendulum rod is kept from wobbling around by a screw - this needs to be removed before the clock can be lifted from the crate.



The clock can now be eased gently off the mounting peg by applying pressure on the wall bracket as indicated by the arrows.

At this stage, please hold the clock only by the wall bracket and the frame back plate as shown below; it is tempting to pull the frame front to lift the clock but this will result in damage. The frame back plate is wedged quite tightly in its foam-lined wooden block so some pressure will be required to lift it free. Allow the clock to be lifted as indicated by the larger arrow.

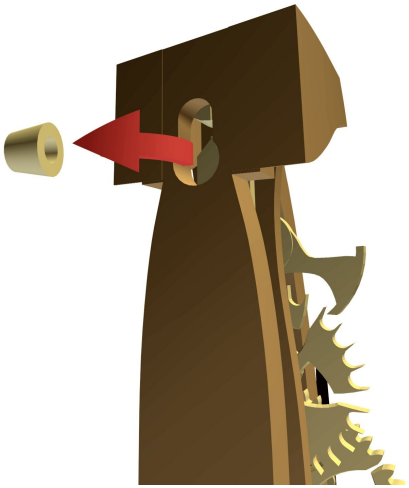


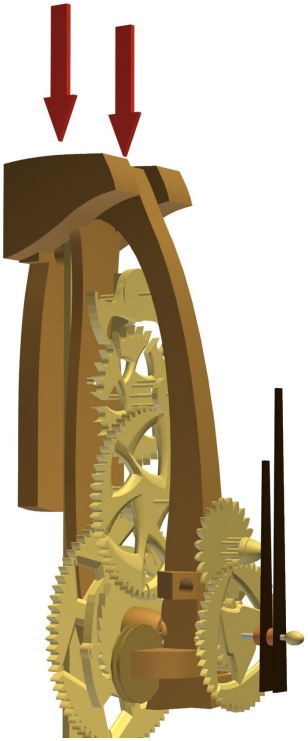
Mounting the Clock

While handling the clock please avoid touching the wheels at all times.

The clock is best held by the upper part of the frame front and the top of the wall bracket.

Notice the keyhole shaped slot in the rear of the back plate - the lower (circular) part of this slot will engage with the mounting peg on the wall.





When the clock is sitting on the mounting peg ensure that the frame back plate is right up against the wall, then apply even firm pressure downwards.

The frame should move downwards with a satisfying ‘clunk’, indicating that the clock is correctly mounted on its peg.

It may prove difficult to press the clock into place - in this case it should be lifted and put to one side momentarily. The peg will need to be unscrewed, and the optional plywood spacer should be employed.

This is further complicated if the toggle fixing has been used. In this case unscrewing the peg will cause the toggle part to be lost in the wall - this is why you have been given two.

Fitting the Pendulum

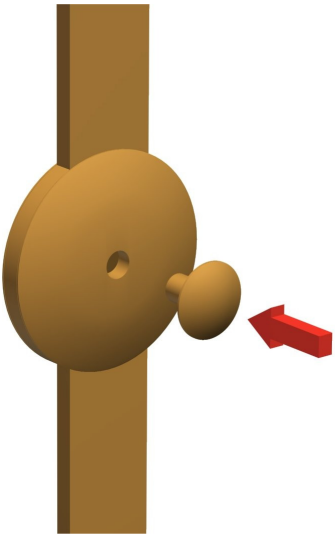
The lower pendulum can now be fitted to the clock.

Placing a pillow on the floor under the clock is a wise precaution at this stage - the pendulum bob is filled with lead and is heavy; it would be damaged should it fall to the floor.

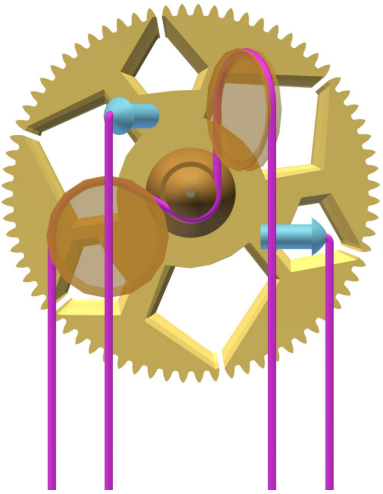
Be sure you have the pendulum facing forwards - it might not fit properly otherwise. The two tiny wooden pegs visible on the circular pendulum joiner should be to the rear.

Lift the lower pendulum, inserting the end of the upper rod into the joiner.

Slip the pendulum peg home, making sure it goes as deep as possible



Fitting the weight cord

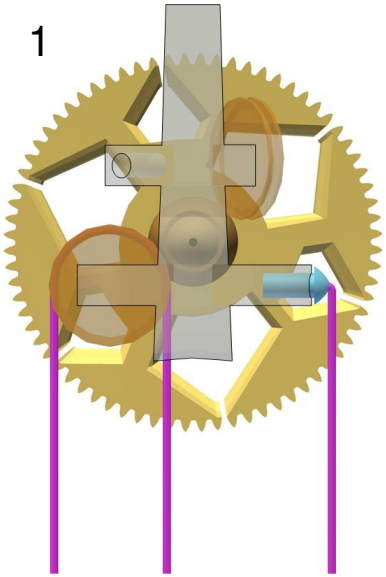


This simplified illustration shows the a close-up of the weight cord (shown in cerise) fitted around the two pulleys and the central winding arbour, with the great wheel behind.

The sequence that follows shows how the cord is laced within the clock.

In these images the lower clock frame has been shown as a translucent grey block to indicate the sections of cord that go in front of the frame and those which go behind.

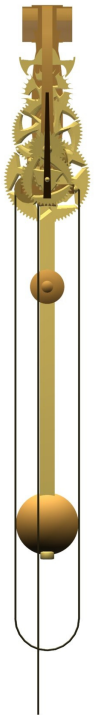
1

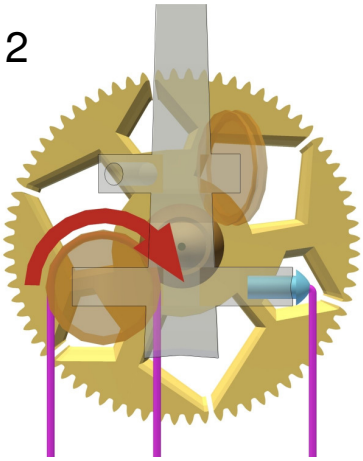


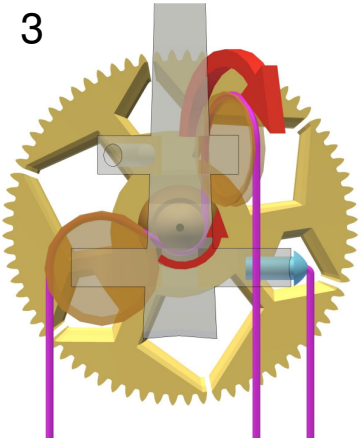
The cord terminals (light blue in the illustrations) are marked
L & R - first fit the one marked R into the right hand hole in the frame as shown.

On the left side of the clock in between the frame and the great wheel, loop the cord over the left hand pulley. Allow most of the cord to fall to the outside, forming a long loop as shown on the right.

Notice how the cord lines up with a groove in the winding arbour.



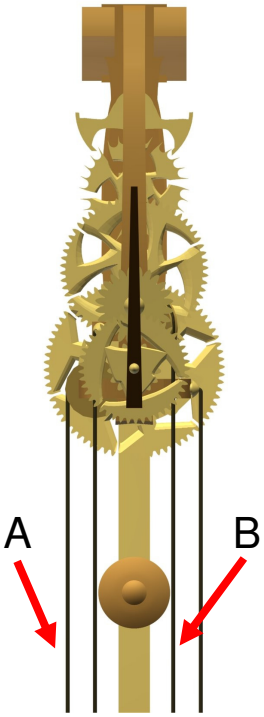




Notice also that there are small metal pins sticking up out of the bottom of this groove - these hold onto the cord and stop it the slipping through the groove.

Wrap the cord up underneath the winding arbour, then over the top of the angled pulley and down in front of the frame.

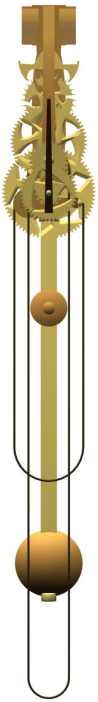
Bring the cord back up and insert the other terminal (marked L) in its hole.



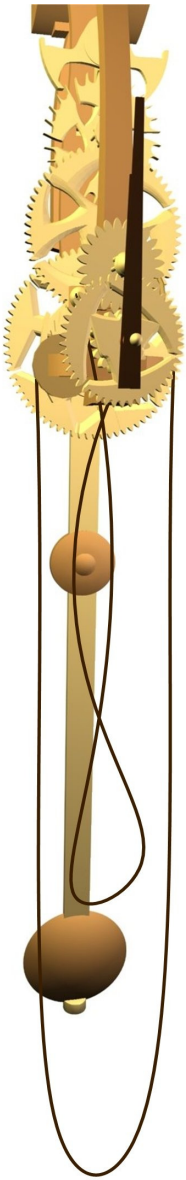
Before hanging the weights in their loops, make certain that the cord is snugly seated in the arbour groove by pulling gently on the sections marked A & B.

Now check that the cord runs evenly and remains in the groove by pulling B down while letting A up gradually.

The loops should hang evenly, as shown in the illustration on the right.

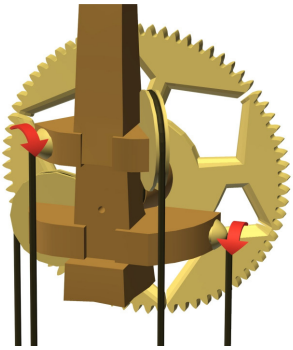


Hanging The Weights

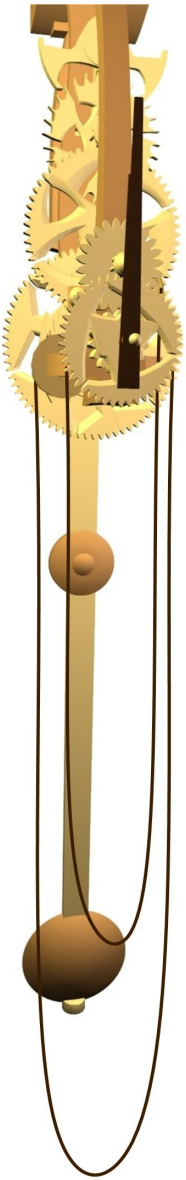


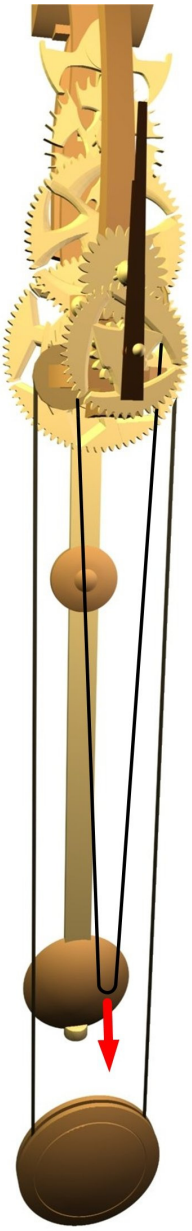
The weight cord will probably require some adjustment to enable it to hang evenly.

This is accomplished by rotating the corresponding cord terminal until any twists have been unwound.



The cord should be made to hang as straight as possible to avoid a perilous situation - small twists in the cord can gradually work their way round to the winding arbour and eventually cause the cord to ride up out of its groove. The cord can then slip out of the groove, allowing the weight to fall rapidly: potentially damaging the clock.



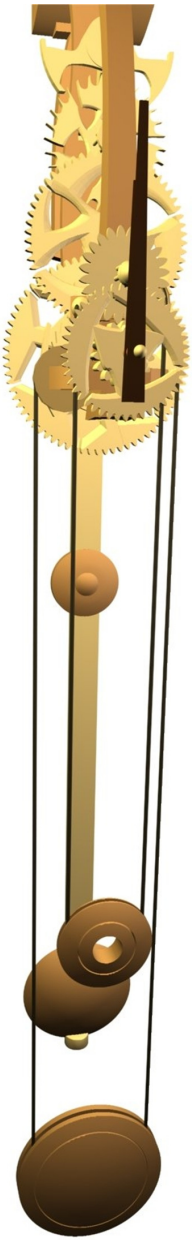


Before hanging the weights, please double check to ensure that the cord is sitting in its groove in the drive arbour. Sorry to keep going on about it.

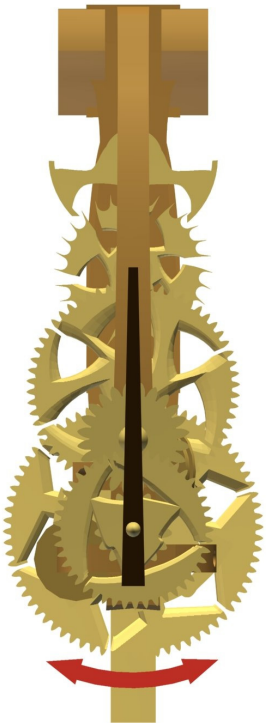
Slip a thumb into the nearer of the two loops in the cord and apply a little downward pressure as you hang the large drive weight in the other loop.

Now hang the counter-weight in the nearer loop.

The clock is wound by placing a thumb in the counterweight hole and pulling downwards, lifting the drive weight. A good deal of force is required to raise the weight; expect the ratchet mechanism to make a moderately loud noise during winding.



Adjusting The Clock



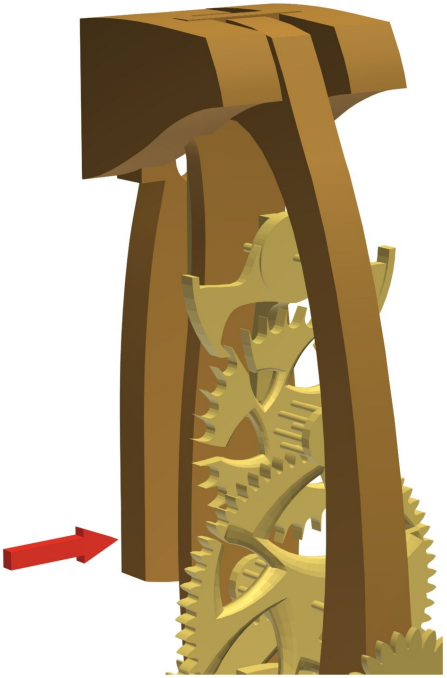
The clock must now be adjusted to bring it “in beat”.

Simply put, this means that the clock **escapement** should be running evenly.

The escapement is the name given to the uppermost two moving parts of the clock - the very top part (which rocks back and forth) is called the **anchor**; the wheel directly beneath is the **escape wheel**. The anchor has two **pallets**, these are the parts which make contact with the escape wheel.

To make this adjustment the clock needs to be swung from one side to the other as shown above, while the sweet spot where it runs smoothly is located.

This precise adjustment is achieved by holding either side of the back plate as shown (illustration on the right - one side only arrowed) and gently easing the clock to one side or the other.



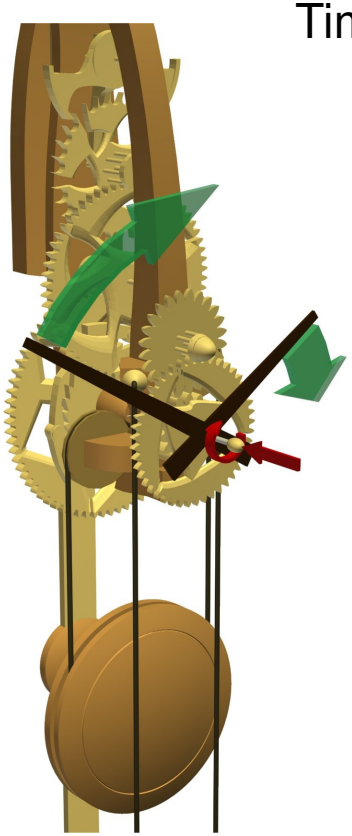
Start the clock by gently swinging the pendulum. Watch the escapement carefully, in particular observe the how far the anchor pallets swing out away from the teeth - this maximum should be the same on both sides.

The Illustrations below show which direction to move the clock to bring it into balance. Make small adjustments, carefully observing the movement of the pallets in and out of the teeth.

In the first few days after installation it is wise to check this adjustment every now and again - indeed, the clock can gradually wander out of beat over time. Should the clock start to misbehave, the adjustment of the beat is the first thing to check.

The clock should now be running “in beat”, producing a balanced “tick - tock - tick - tock” sound (rather than “tick … tock tick… tock tick”). This is a precise adjustment - expect to spend a little time making sure that the swing of the anchor in and out of the escape wheel is the same on both sides.

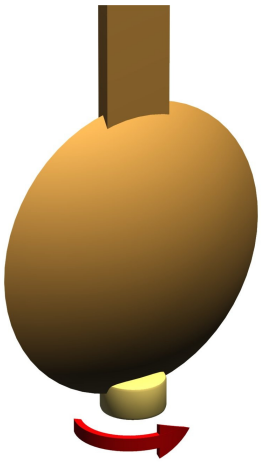
Timekeeping



To adjust the clock hands -

- First grasp the adjuster and press it towards the clock (this disengages the hands from the main movement).
- Rotate the adjuster clockwise while continuing to press - the hands follow.
- Set the time.

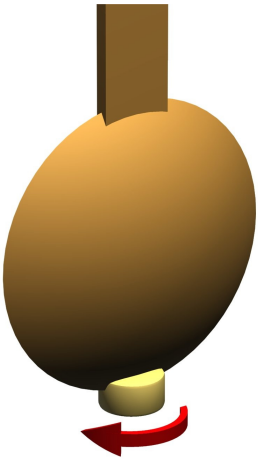
The clock is capable of keeping time accurately. If the clock is running slow rotate the bobnut as shown in the left hand illustration, follow the right hand illustration if it is running fast.



If the Clock Runs

daily difference (in minutes)	adjustment (bobnut turns)
1	2
2	4
5	10

weekly difference (in minutes)	adjustment (bobnut turns)
1	0.3
2	0.6
5	1.5



If the Clock Runs Fast

Running

The clock is designed to be wound at roughly the same time each day - it will run for 30 hours on one complete wind.

Apply a firm even downwards force, but try not to rush the winding - aim to have wound the clock by the time you have counted to three.

The clock will run backwards during the winding - the time keeping is thus affected, but not by very much. My later clocks will include a ‘maintaining power’ arrangement, when I’ve worked out how to do it.

It is possible that the clock will stop in the few minutes after winding it - if so, simply restart it.

Allow the drive weight to meet the bottom of the clock frame gently as you complete the winding.

If the clock is allowed to run down it will stop, the counter-weight resting against the bottom of the frame. Wind the clock again, and gently restart.

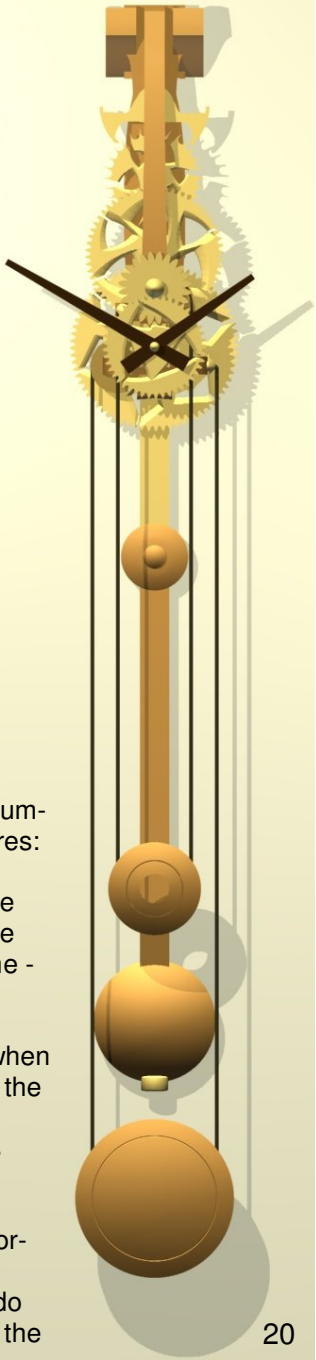
Your clock has been supplied with a soft brush for dusting - this can be done while the clock is running. Gentle strokes away from the wall will do the trick.

The normal running of the clock can be disrupted by a few circum-stances. Should it become reluctant to work try these procedures:

Restart the clock - if it runs, check that it is running ‘in beat’ (the escapement anchor swings away from the escape wheel by the same amount on each side). This adjustment can drift over time - re-adjust if needed.

If the clock won’t start (the escape wheel doesn’t rotate at all when the pendulum is swung) several steps can be taken - first take the escape wheel and gently jiggle it in and out, and repeat for the intermediate wheel. Now rotate the clock hands a full 12 hours before setting the time and re-starting the clock.

Normally these methods will enable the clock to return to its nor-mal stable running. If it continues to require frequent re-starts, however, it may need to be returned to the workshop. Please do not hesitate to get in touch if you experience any difficulty with the clock.



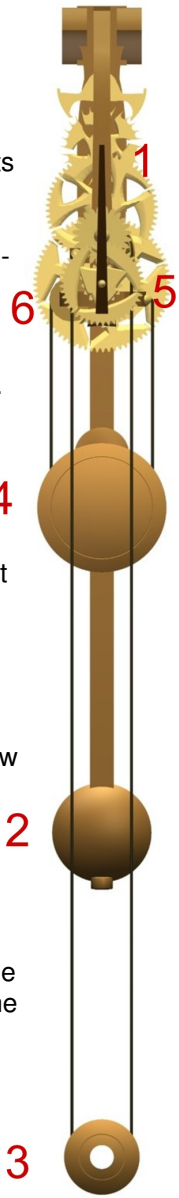
Dismantling the and Re-packing the Clock

At some time it will be necessary to dismantle the clock for storage, moving house or returning to the workshop for maintenance.

You will need the crate, the old towel, pillow and crosshead screwdriver used when the clock was first unpacked

Have the opened crate lying on an old towel, ready to accept the parts as they are removed.

- Wind the clock so that the main weight is quite close to its highest position, as shown.
- Set the time to read 12:00 (1).
- Stop the clock by gently arresting the pendulum bob (2).
- Remove the counterweight (3) followed by the drive weight (4).
- Remove the cord terminals from the frame (5).
- Slip the cord off the left hand pulley first, allow it to drop under the clock, then lift it off the right hand pulley (6).



If the clock is being returned to the workshop, our telephone discussion will have clarified which items need to be included - probably just the clock mechanism. If this is the case, the weights will need to be stored safely outside the crate. If the entire clock is being packed, screw the weights in their places now, wind up the cord and bag it.

Now place the pillow on the floor under the clock and dismantle the pendulum by removing the peg - the lower half of the pendulum is now free to fall, but might require a little tug. This item may also not need to be returned to the workshop.

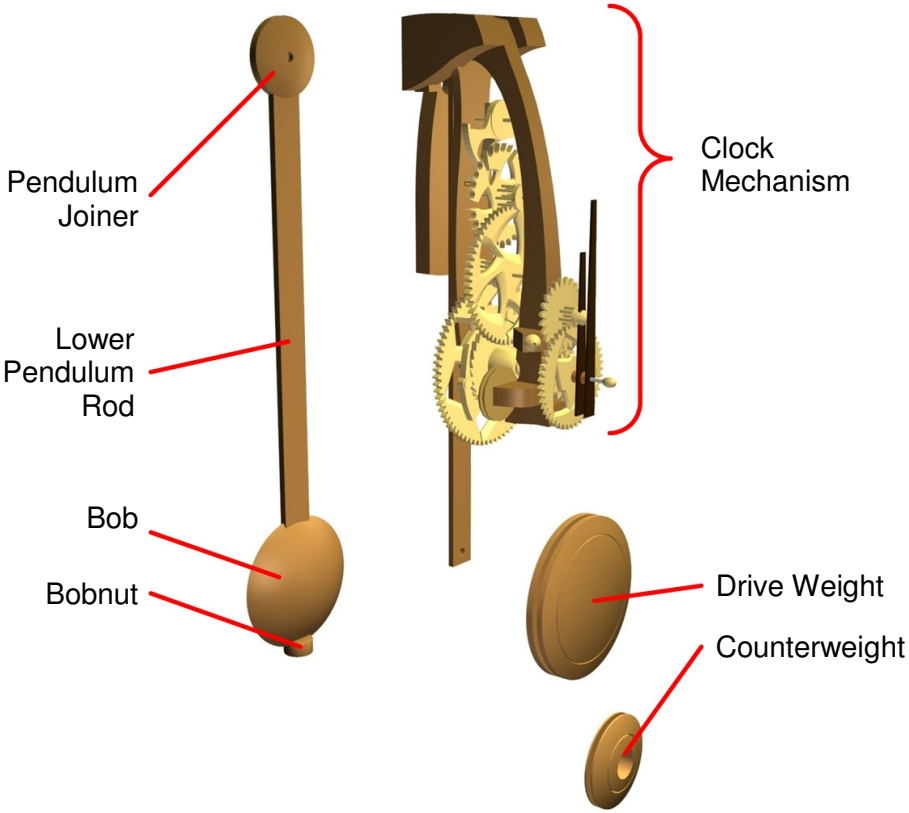
The clock can now be lifted from its peg - it may well be hard to remove. First grip the back plate and ease it from side to side. Place one hand over the top of the clock, gripping the bracket sides, and push the back plate upwards with the other hand. A gentle side to side rocking motion will free the clock, whereupon it can be lifted free of the mounting peg.

The clock can now be placed in position in the crate. Please ensure that the clock is only handled by the back plate and bracket as it is eased into place, locating with the crate mounting peg first, then slid down to be held by the foam lined wooden block. Screw the upper pendulum in place within the crate.

If the entire clock is to be packed, please ensure that all the various fixing pieces are located securely, holding their respective parts in place.

If the clock is now to be stored, please be aware of its environment. It can withstand wide temperature variations but storage at an even cool room temperature is preferred. The clock does not like frequent, rapid changes in temperature. Please ensure that it is stored in a dry place, especially for long term storage.

Identifying the Clock Parts



Identifying the Clock Parts (continued)