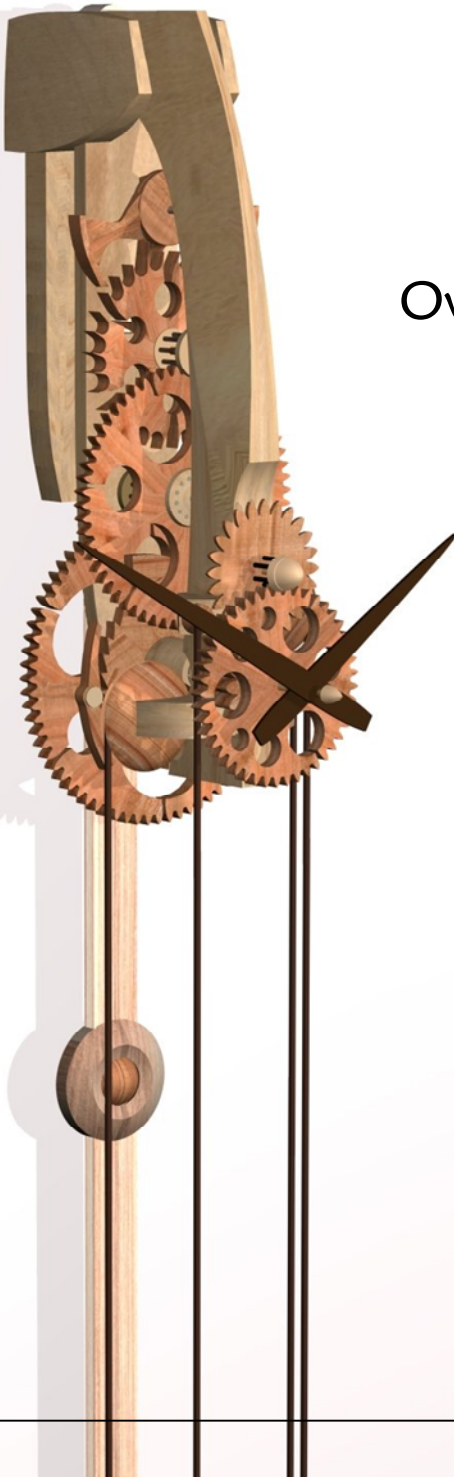


# Clock 12

Owners Booklet

Bruce Aitken



This user manual accompanies one of the 'Clock 12' series of clocks designed and made by Bruce Aitken.

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9th Edition

Printed by Bruce Aitken

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# Preliminaries

Installation of your clock is a simple process - a single 6mm diameter hole needs to be drilled in the wall at roughly head height.

It generally takes around twenty minutes to install a clock but some walls can be more difficult.

You will need:

- A vertical wall - any wonky wall is fine after a shim or custom mount is fitted as needed - quick to fix, get in touch
- An electric drill (hammer type)
- A 6mm drill bit suitable for your type of wall
- A hammer
- A crosshead screwdriver (Poizidriv variety)  
- A cushion to put on the floor as you work, heavy and fiddly stuff to get right first time...

# A Suitable Location for the Clock

The clock can be successfully located in many settings, here are some things to bear in mind:

- The clock protrudes from the wall by nearly 200mm (8 inches) and is delicate. It should be placed to exclude the chance of someone accidentally brushing against it. Alcoves are safe.
- The clock needs clear space beneath it for the weight to descend. The clock measures 1.3m (4' 3") from the very top to the bottom of the large weight at its lowest extent.
- The hands sweep through a diameter of 300mm (12").
- The wall it is mounted on does need to be more or less vertical. If your wall turns out to be wonky please send me a side view of a plumb line hanging from the same height as the clock mount - this will enable me to make the custom spacer for your wall.

The clock is susceptible to excessive drying so should be placed away from radiators - the more stable the environment the better, in general.

- Excess moisture should also be avoided, the clock should certainly not be installed in a bathroom.
- A kitchen is also a bad place, unless large and well ventilated - the build up of airborne cooking residue will gum a clock up horribly and cannot be properly removed.
- The clock does, of course, make a noise. It has a pleasant slow tick - tock. It also makes a loud clattering noise while being wound, this is to be expected.

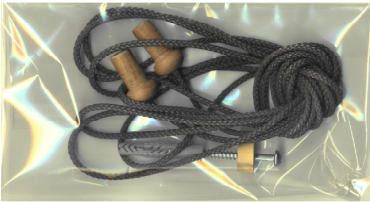
# Box Contents



Newly opened box



A bag of bits sits atop bubblewrap rolls inside the inner box



bag of bits - cord and wall fixing

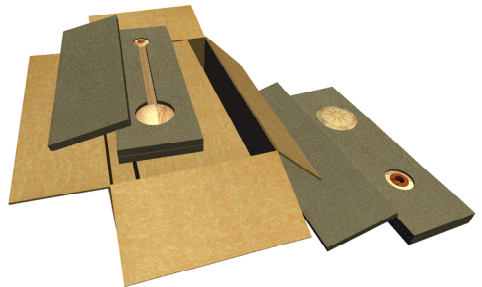


wall fixing

The images below show how the clock sits in the packaging; it is wise to leave the parts there until you are ready to hang them on the wall.



The clock movement is cushioned between bubblewrap rolls



The pendulum and weights are held in dense foam either side of the inner box

# Drilling the Mounting Hole

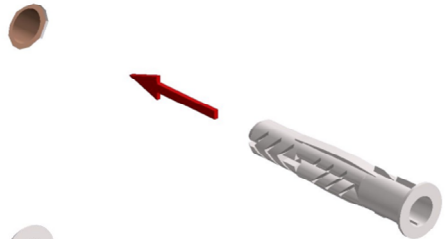
The clock can be mounted on just about any type of wall.

The grey wall-plug provided is a new general purpose type that works just as well in solid or cavity walls, you just need to drill a 6mm diameter hole in the wall of your choice.

The clock hands rotate around a central axis some 250mm (approx 10") below the mounting screw, so decide where you want the hands to be and make a mark on the wall 250mm above that.

I find that a hole drilled about a hand's breadth above an average eye level is a good guide - choose your favourite average...

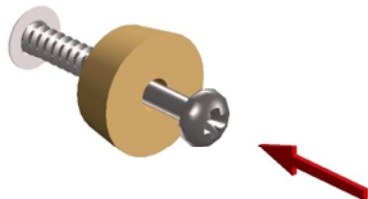
Select a 6mm drill bit  
suitable for your wall and  
drill the hole



Use the hammer to  
tap the wall-plug  
firmly into place



Screw the  
mounting  
peg home



Make sure it is nice and  
tight and doesn't rotate

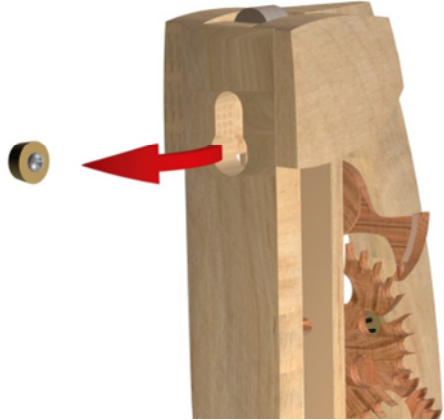


# Mounting the Clock

Refer back to page 5 to see how  
the clock is packed

Remove the top bubblewrap rolls  
from the inner box and take out  
the clock movement

Engage the keyhole slot on the  
back of the clock with the  
mounting peg on the wall



Move the clock home by  
easing it down onto the  
peg; it should sit into  
place with a satisfying  
'clunk'

Ensure the clock  
movement is held firmly on  
the wall, then ease it back  
and forth until it hangs  
more or less vertically

# Fitting the Pendulum

Before fitting any of the weight set it's a good idea to put a cushion on the floor beneath the clock - both the pendulum and drive weight are heavy and somewhat ungainly, damage is inevitable if dropped.



Take the pendulum out of its foam packing



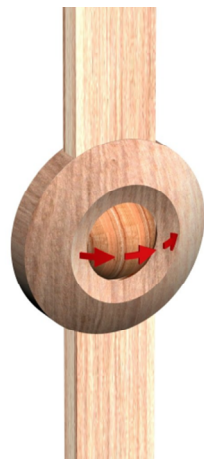
Be sure you have the pendulum facing forwards - all screws should be to the rear



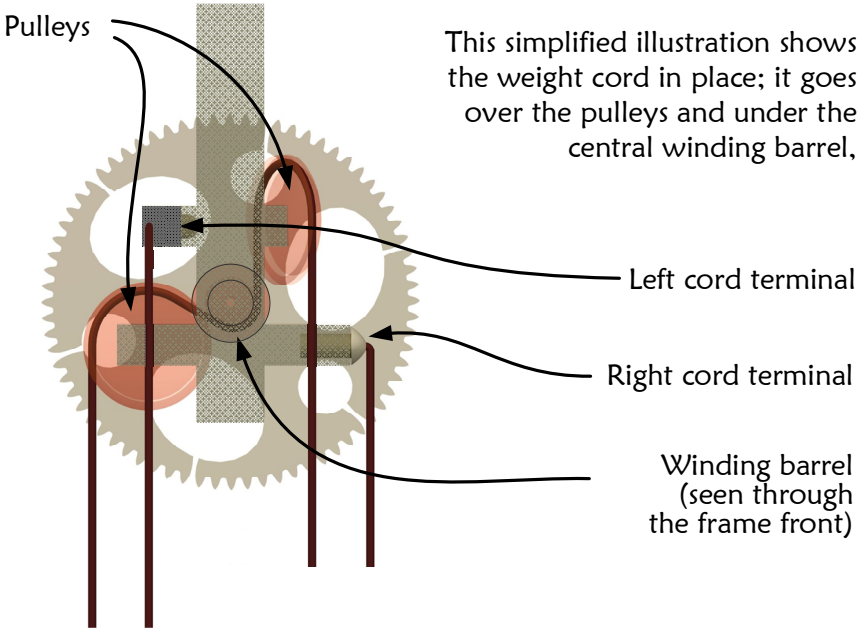
Lift the lower pendulum and engage it with the upper part, rotate the ball as shown below to connect and keep going a bit longer just to be sure

The accuracy of the clock is dependent on the length of the pendulum; fine adjustments of this ball will enable you to bring the clock into good timekeeping

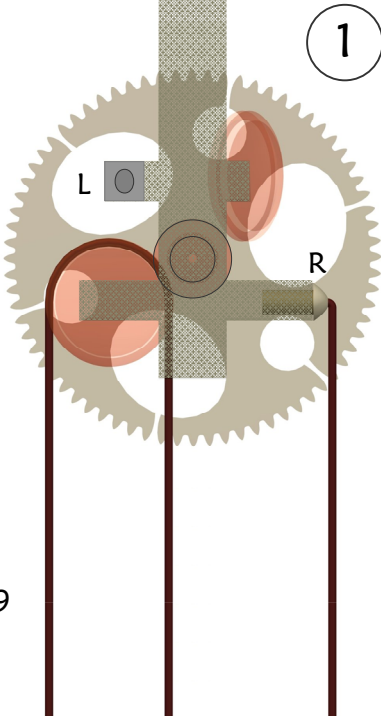
One twist of the ball between thumb and forefinger is about one third of it's full rotation. 30 of these twists brings the pendulum about half way up its available range, this is a good place from which to start the timekeeping process, which comes a bit later.



# The weight cord



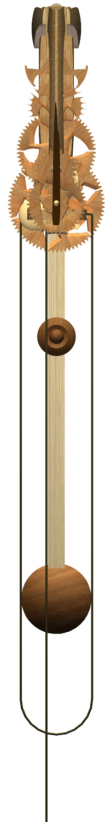
## How to fit the weight cord

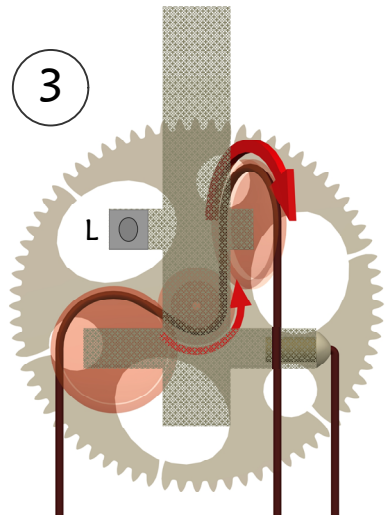
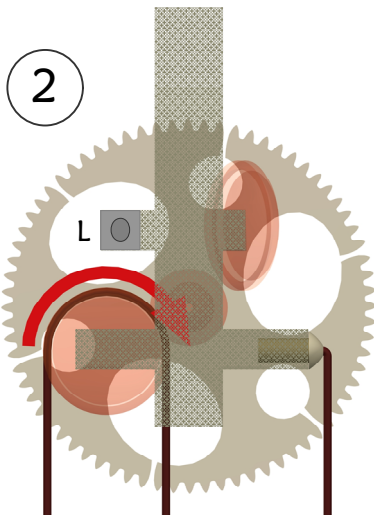


The cord terminals are marked L & R - put R in place as shown and let the cord drop freely

Shake out the cord, untangle any twists

Loop the far end of the cord over the top of the left hand pulley and pull down into place between the pulley and the winding barrel. It should snap into place





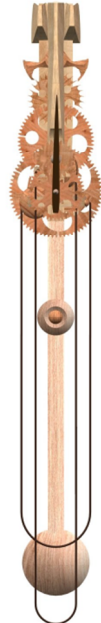
Wrap the cord up underneath the winding barrel, then over the top of the angled pulley and down in front of the frame.

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 grooves by pulling gently on the sections marked A & B simultaneously

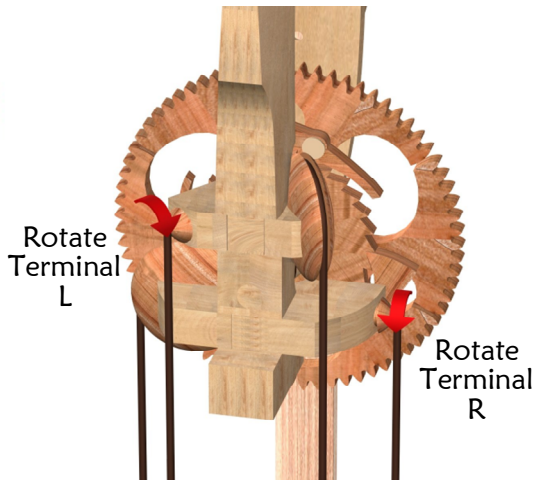
Now check that the cord runs evenly and stays in the groove by pulling B down while letting A up gradually, the ratchet wheel will click.



# Hanging The Weights

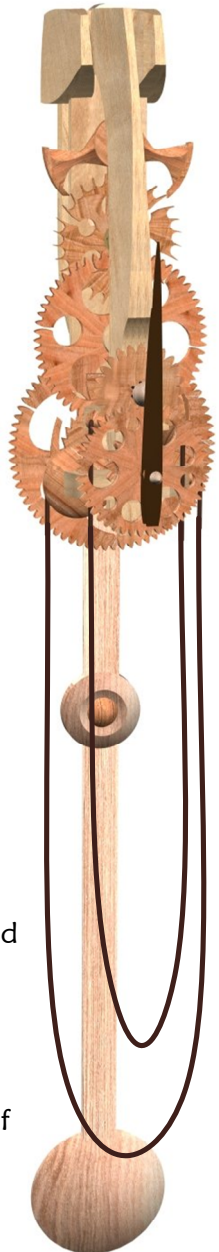
The weight cord might require some adjustment to persuade it to hang evenly.

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



This needs to be done to avoid a perilous situation - small twists in the cord can gradually work their way round to the winding barrel and eventually cause the cord to ride up out of its groove.

The cord can then slip completely out of the groove, allowing the weight to fall rapidly: this is potentially damaging. Sometimes the weight could even jump out of the cord, falling to the floor and damaging itself and anything it lands on.





Take the drive weight and winder from the packing.

Before hanging the weights, please double check to ensure that the cord is well seated 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 counterweight in the nearer loop.

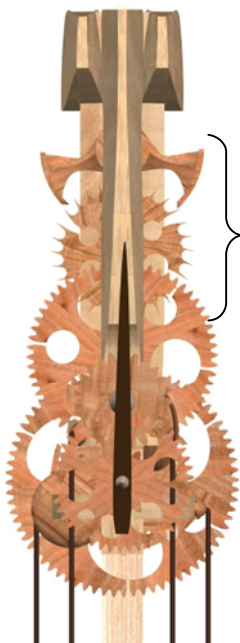
The clock is wound by placing a thumb in the winder hole and pulling downwards, thus lifting the drive weight.

The weight is about 900g, an equivalent force is required to raise it.

Expect the ratchet mechanism to make a racket during winding, this is normal.



# Adjusting The Clock Escapement



The clock can now be run and adjusted to bring it 'in beat', meaning that the escapement will be running evenly rather than lop-sidedly.

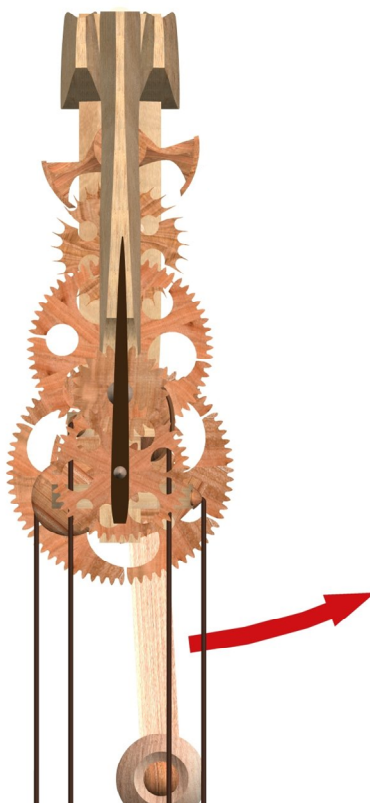
the 'escapement' is the name given to the two uppermost moving parts of the clock

The top part (the bit that rocks back and forth) is the anchor; the wheel directly beneath is the escape wheel. The anchor continually stops then releases the escape wheel, over and over, as the clock runs on and on.

This clock has a self-adjusting escape anchor which resets easily and enables very reliable running.

Make sure that the clock movement looks vertical, then gently move the pendulum as far as possible in the direction shown.

The tip of the left pallet will touch the 'land' between two escape teeth (shown opposite, top)



The pallet touches the bottom land between two escape teeth as expected



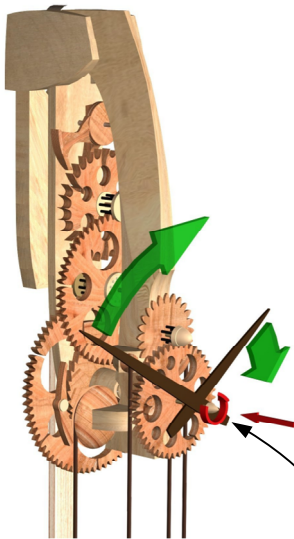
Now release the pendulum. As it swings the opposite pallet will also hit the bottom land a few times and the pendulum will soon settle into normal, balanced running.

Whenever the clock needs to be restarted please give the pendulum an initial wide swing like this, it ensures the clock is always reset to it's most balanced configuration.

Wind the clock daily - it will run for around thirty hours on a complete wind.

Try winding at different times of day - watch how the relationship between the weights changes over a day and take your time to chose a winding time you like.

# Timekeeping



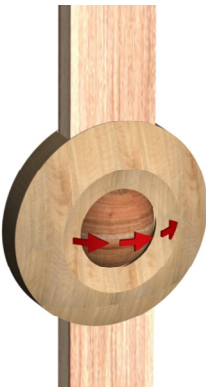
To adjust the clock hands first grip the hand adjuster and press it towards the clock (this disengages the hands from the main movement).

- Rotate the adjuster clockwise while continuing to press - the hands follow.
- Set the time.

hand adjuster

The clock is capable of keeping time accurately. If the clock is running slow rotate the adjusting ball as shown in the left hand illustration, follow the right hand illustration if it is running fast. The table shows roughly how many turns of the ball are needed.

If Slow



| daily difference<br>(in minutes) | adjustment<br>(twists of the ball) |
|----------------------------------|------------------------------------|
| 4                                | 24                                 |
| 2                                | 12                                 |
| 1                                | 6                                  |

| weekly difference<br>(in minutes) | adjustment<br>(twists of the ball) |
|-----------------------------------|------------------------------------|
| 3                                 | 2                                  |
| 2                                 | 1.5                                |
| 1                                 | 0.8                                |

If Fast



# Running

The clock is designed to be wound at roughly the same time each day.

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. Allow the drive weight to meet the bottom of the clock frame gently.

The clock will run backwards during the winding - the time keeping is thus affected but only by the few seconds it takes to wind it. This is an inevitable feature of such a simple clock.

It is possible that the clock will stop after winding - simply restart it with a nice wide swing. Whenever the clock needs to be restarted give it a nice wide swing to reset the escapement - this always helps.

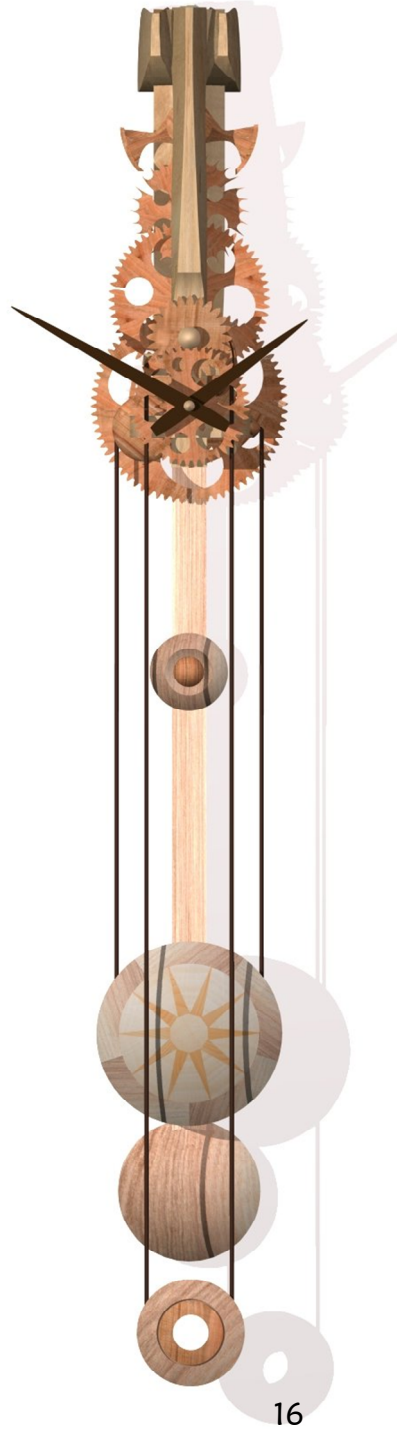
If the clock is allowed to run down it will stop, the winder resting against the bottom of the frame. Wind the clock again and restart.

The normal running of the clock can be disrupted occasionally. 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). The clock can drift from vertical over time - re-adjust if needed.

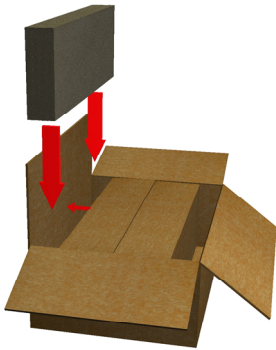
If the clock won't run (the escape wheel doesn't rotate at all when the pendulum is swung) several steps can be taken - first take the escape wheel and gently jiggle it in and out, and repeat for the intermediate wheel. Now rotate the clock hands a full 12 hours before setting the time and re-starting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

Normally these methods will encourage the clock to return to its normal 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 difficulties.



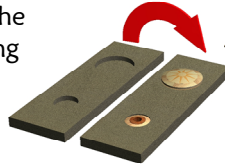
# Preparing the clock for storage or transit

First set the time to 12:00 then stop the clock.



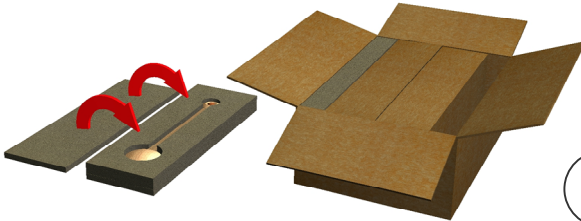
1 - Remove the winder and drive weight and pack inside the corresponding foam parts

1



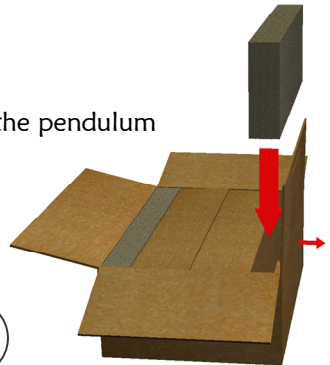
2

2 - Ease the foam rectangle into the box as shown. Lifting the flap to vertical and pushing the middle of the box wall (little red arrow) makes this easier



3 - Do the same with the pendulum

3



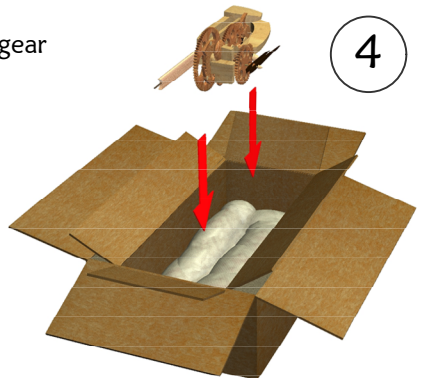
4 - Open the inner box and remove the top two bubblewrap rolls

Rest the clock movement on the lower rolls so the gear wheels sit in between them

Lay the cord (leave it attached to the clock if you prefer) alongside so it doesn't snag

Put the top bubblewrap tubes in place and close the box

4



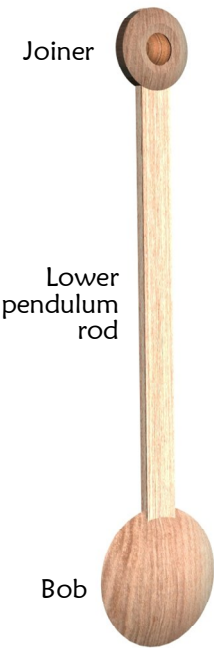
If the clock is to be stored for more than a few months it is wise to seal the full cardboard box inside a large pvc covering - a well taped down heavy duty binbag works very well. This goes some way to conserving the familiar and benevolent humidity of the room the clock was in until it is next unpacked.

It's also a good idea to wrap the box like this if it is to be sent somewhere as it extends the life of the packaging considerably.

The clock should not travel in an aeroplane hold - hand luggage only, please.

# Identifying the Clock Parts

Pendulum:



Clock Movement



Drive weight



Winder

# Identifying the Clock Parts (continued)

