Murday Clock Survey


THE LATE MR. HENRY REASON,
Founder of the Reason Mfg. Co. and its Governing Director from its registration till 1900.

Henry Reason
Company Founder

Thomas Murday
In 1931 or 1932


MR. HERBERT REASON,
A Director of the Reason Mfg. Co. since 1906.
("Publicitas.")

Herbert Reason
Director

This is a shortened version of UK Electrical Horology Group technical paper no 96, which records the findings of a meeting in March 2022. The intention was to see as many Murday clocks as possible together in one place, identify variations and use the data to design a survey of surviving clocks.

The Reason Manufacturing Company

The company was formed by Henry Reason and the first electrical items were made around 1891 to 1895, fuse boxes and electrical control equipment.

Thomas John Murday was an electrical engineer born in Gateshead in 1865, and in 1897 he was working on electric clocks with Parsons at Gents. He moved to Brighton and in 1910 the patent for the balance wheel clock is from the Reason Manufacturing Company, but he stayed only until June 1911 when he emigrated to Australia where he worked for Prouds Ltd and further developed the balance wheel clocks. Clock production at Reason almost certainly ceased during or before 1914 and production was for no more than four and a half years. No Reason Manufacturing company records have been located.

The clocks

The large horizontal balance wheel electromechanical clocks designed by Thomas Murday and manufactured by The Reason Manufacturing company in Brighton are well known. Their attractive imposing appearance is tempered by their poor timekeeping, but they have long been sought after and prized by collectors. Less well known are the pendulum clocks, both one second and half second and the small horizontal balance wheel design using a single coil (‘Mk2’).

Lack of original information and variation between clocks has led to numerous concerns and urban myths about what may or may not be original. The large balance wheel clocks would be relatively easy to fake, being straightforward to make from stock plate and bar. Rumours abound about clocks constructed from leftover parts or of completely recent manufacture and information from two sources indicates that a batch of very close copies was made in the UK at some time between 1990 and 2007.

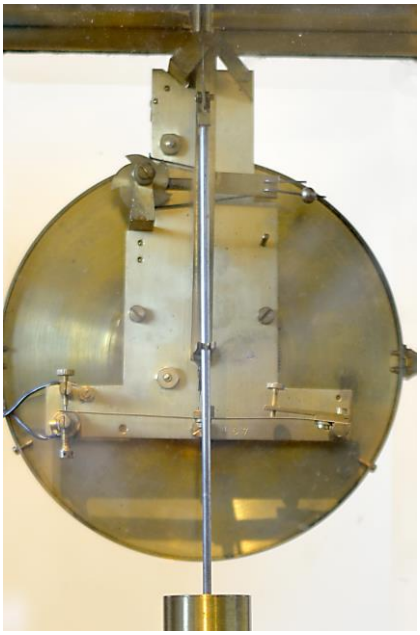
Some confusion may arise from clocks of more recent design. John Wilding published instructions to build a similar clock in The Clockmaker magazine but the clock has a distinctive appearance and is unlikely to be

mistaken for the genuine article. A more similar clock was commissioned by the well-known UK electric clock dealer David Harriman in the 1990's. Again, these have distinctive differences from original clocks and bear the name David Harriman, Rickmansworth, on the dial. Plans for another large balance wheel clock with a closer resemblance to the original Murday were published by Alec Price, also in 'The Clockmaker' magazine. Other amateur, but sometimes very well made, copies and derivatives are seen occasionally.

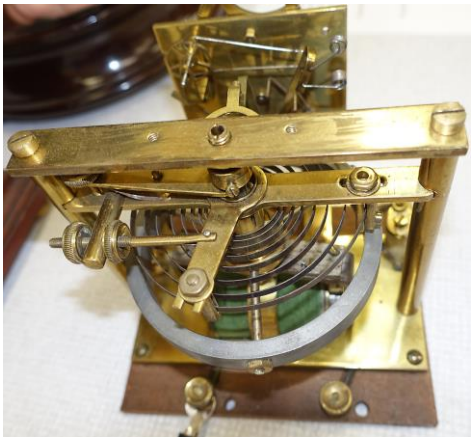
Clocks examined

It is thought that some 300 or 400 clocks were produced, and the small numbers thought to have survived and their distribution to collectors worldwide have made it difficult to assess their similarities and differences. To address this, members brought 12 large balance wheel clocks, 2 small balance wheel clocks ('Mk2'), 2 half second pendulum clocks and a slave dial. The variation between clocks was striking and it could be appreciated how easily confusion could arise about original features. One clock had a high serial number but other apparently original features and it was considered that the great majority, if not all, were original examples.

Large balance wheel clock



Half second clock



Small balance wheel (Mk2) clock

Following the meeting, details have been trawled from the internet auction and image sites where a serial number has been included in the description, and from our photograph collections. We are grateful to Norman Heckenberg and Tony Roberts in Australia who have undertaken considerable research about Thomas Murday's later career and have experience of Murday clocks in Australia where the brochures and movements for both pendulum and later balance wheel clocks have recently come to light.

What facts are known?

Several pieces of information can be confirmed from the Reason brochure and contemporaneous articles:

Large balance wheel clocks:

- The balance wheel was made of a temperature stable nickel steel alloy, presumably Invar.
- The steel pivots run in sapphire cup bearings (see comment below).
- The clock was designed to run on two dry cells, presumably 3 volts.
- The clock was said to run 2 minutes between impulses
- The original dome is 12 inches high, making a total height of 15 inches with a 10-inch diameter base, the dome height being approximately 2.2 inches above the top of the dial.
- The glass dial was 5½ inches in diameter.
- Dials were available in both Roman and Arabic numerals with figures available in black, white, silver or gold.
- Although most clocks are shown with *fleur-de-lys* hands (and these are by far the most common), spade hands are shown on the pendulum clock no. 5 and perforated cross hands on pendulum clock design no 2.

Half second pendulum clock

- The pendulum rod was made of a temperature stable nickel steel alloy, presumably Invar (though the bob is only supported at the base).
- The clock was designed to run on two dry cells, presumably 3 V.
- The Hipp toggle is steel and the block brass.
- The contacts are both platinum.

- Each impulse was claimed to produce 50-60 pendulum ‘swings’ (probably half cycles on current experience).
- Closed case clocks had a pendulum retaining spring on the left side for transport.
- One turn of the regulating screw is equivalent to half a minute each day.
- 5 cases were available:
    - No 1, enclosed wood with square panel below dial, in fumed oak.
    - No 2, enclosed wood with brass or copper feet and bound corners, in oak or mahogany
    - No 3, pyramid or ‘A design’ case with 4 glass sides, in mahogany with a different movement and support shape.
    - No 4, mahogany base with brass 4 glass case with a brass cut out at the front masking the two 1.5v cells.
    - No 5, square wall dial case hanging on a diagonal, in fumed oak.

The patents reveal little useful information, given that many other clocks vary from their original drawings. The 1910 patent drawing has 4 supporting arms and 4 weights on the large balance wheel, but all clocks seen so far have three on both the large and small balance wheel clocks.

Rumour and myth?

The following have been said to indicate original clocks, but may be rumour or myth:

- The original wiring was held in place underneath the base plate using a compound material similar to Chatterton’s compound.
- Underneath the round base plate there is a pattern of circular grooves that resemble a 78 record.
- The central arbor pivots may show a spiral tool mark as they were produced on a lathe with a tailstock feed that would leave a groove as the tool was withdrawn while the lathe was slowing.
- Chatter marks may be seen on arbors, which are extremely hard.
- The paper behind the glass dials was held in place by the brass rings.
- Glass dials were painted on their back.
- Not all serial numbers were used, or that numbering started at 200.
- Insulation pillars for contact arm should be celluloid or ivorine or similar and yellow with age; fakes or replacements in modern plastics stay white

Findings from the meeting

Many springs are replaced. The correct dimensions and number of turns on the original spring are not yet known.

Contact springs have also often been replaced. The originals were silvered brass with a zig-zag pattern along the top.

The large balance wheel clocks usually have a double V notch cut into the Hipp block on the contact spring. Pendulum clocks all seem to have a block to one side of the neutral toggle position with a single groove, except one in Australia that has a double notch. All large balance wheel clocks seen or photographed have a double V notched block. Small Mk2 balance wheel clocks have a different design.

The lowest serial number was 35 and the highest 482, but there are clearly apparently original clocks throughout the number range, but nothing between 368 and 482. No duplicate serial numbers have been found. All small wheel clocks (sometimes referred to as Mark II balance wheel clocks) have serial numbers higher than 336 suggesting later production, and this seems likely as the clock is simplified and improved by replacing the mechanical impulse with electromagnetic impulse. All half second pendulum clocks cluster in low numbers below 167 (60, 61, 66, 146, 167) and may be an earlier production. The serial numbers seem to

run in a single series to include both pendulum and balance wheel clocks. Case types do not appear to cluster. However, we can conclude that all serial numbers may have been used and that pendulum clocks appear to have been discontinued early on.

Many of the clear glass dials appear to have had a paper backing originally, now lost. The paper remains firmly attached to 5 dials and others have a glue residue that has clearly been difficult to remove without damaging the numerals. There was no clock with a paper dial held in place by dial rims.

Almost all dials have been back-painted. The only one so far with front painted numerals on glass is a clock with good provenance, but it not yet clear whether a front painted dial indicates a replacement or simply a variation.

The baseplates of all large balance wheel clocks were examined. Many had been cleaned. Five showed the concentric grooved ’78 record-like’ pattern while others had criss-cross or random scratch patterns. It seems that this concentric pattern is probably an original manufacturing mark and it is seen across the whole serial number range, but not on all clocks. Only clock 482 had compound holding the wiring, two had residue, 311 and 332, but the few others examined had been cleaned efficiently.

Two patterns of pivot have been found. The lower pivot bearings were all sapphire cups and the upper pivot is cylindrical running in an adjustable brass screw pivot. One small balance wheel clock examined has a ruby bearing.

Two sizes of coil were used, and these do not appear to cluster by serial number. The image in the original Reason brochure shows small coils, which were much less common overall.

The brochure clock has spring clip dial retainers. The earliest clock seen, 35, already has the later slotted post retainers. While these clips might be thought a marker of an early clock, they are also seen in clocks 207, 236, 238 and in two pendulum clocks with skeletonised dial nos. 60 and 61 (the remaining half second clocks having enamel, or at least solid white, dials fitted differently).

One or two clocks had wooden bases that appear replaced, but otherwise the profile of the bases matched that shown in the Reason brochure.

Clock 207, the Science Museum clock, only examined in photographs, has two unusual variations not seen on other clocks. The bar supporting the movement is fixed to the two pillars by screws with a spherical finial on top. The bar holding the spring adjuster arm is held by two blocks screwed into the pillars and not held in a slot. These appear unique and not seen in the closest adjacent numbers, 199 and 219.

Pendulum bobs in the half second clocks are either silver coloured with slightly rounded ends or brass with a flat top and bottom. The former are fitted in the enclosed cases and also in the pyramid case no. 3, as confirmed by a clock in Australia and the Reason brochure. The clock in the 4-glass brass case (167, page 4) has the matching brass bob, also as shown in the Reason brochure in the no. 4 case. The case of this clock seems to be an improved version of the No4 case, which oddly has the cells visible. Clock 66 is a half second pendulum clock in a case style not illustrated in the brochure (see image below), and this clock also has the more expensive brass cylindrical bob despite being enclosed.

Half second pendulum clock serial 66. Case style not shown in Reason brochure.

Variations

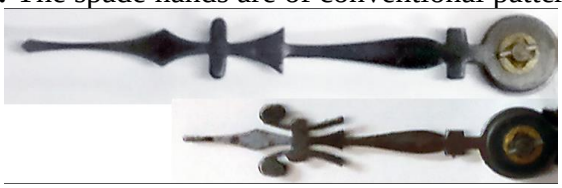
Images of some variations are shown. Please use these to answer the survey questions

Coil size: Large or small

Large, higher than support at far end

Small, lower than support at far end

Hands: The spade hands are of conventional pattern



Original *fleur-de-lys*

Perforated cross

Dial markings: Minute chapter ring or dot markers (with diamond shaped 5 minute markers) and commoner post type of dial fixing



Pivots and base


Long (and pointed)


Short stubby point


Original base profile matching the Reason brochure

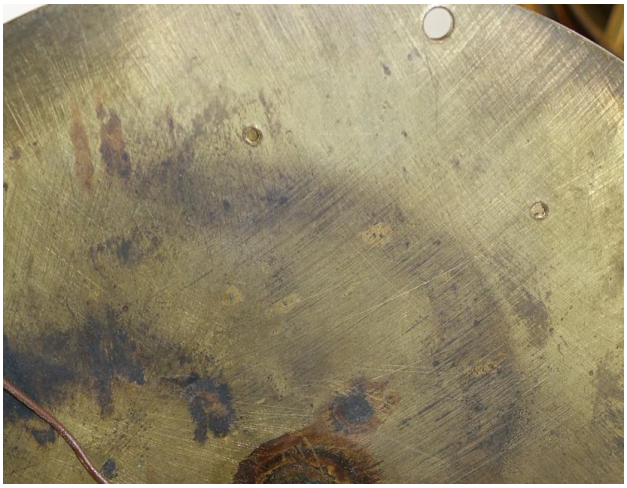
Lower bearing, original types


Standard large wheel clock sapphire


Small balance wheel clock (‘Mk2’) Ruby

Manufacturing patterns on undersurface of baseplate

Concentric grooves “like a 78 rpm record”



Criss-cross pattern

Master and slave clocks

Information has also been compiled for several rarer or unusual Murday clocks, two 1 second pendulum master clocks in wall cases, one previously used at the Reason Company, and one 1 second longcase clock, and one slave dial, details of which are in the full paper available to EHG members from the AHS website.

Summary of clocks known

Key:

No. = Serial number: ? Unknown. It seems likely 1 second pendulum clocks do not have a serial number.
Clock type: LW Large wheel balance; SW Small wheel Mk2; P half second pendulum; PP one second pendulum.
Hands: FdL Fleur de Lys; S Spade; PC perforated cross; C Cathedral.
Coil size: L large; S small; 1L single large.
Coil colour: G green; B brown (possibly varnished cream); C cream.
Dial: C clear glass; SW solid white, not examined, probably enamel; E enamel; PB paper backed glass; CG Clear glass with glue residue suggesting previous paper backing; PT painted back; ES Engraved silvered; WS White skeletonised; B Brass; * see other features column
Dial rims: I inner only; O outer only; B Both; N none; ?M marks, probably present originally.
Dial fixings: P post; S Spring; n/a not applicable.
Num. col = Numerals and colour: A Arabic; R Roman followed by B Black; W White; G Gold.
Min Mark = Minute marker: R ring; D Dots. Those with dots usually have diamond shaped 5 minute markers.
Dial paint: B back; F front of glass dials.
Wires fixed with compound: NC none but cleaned; N None apparently not cleaned; Y yes; R possible residue; n/a not applicable.
Turns spring: Number of turns. Note this was assessed from photographs only.
Base pattern: 78 resembles 78 record; CC pattern of criss-cross scores; F Flat no pattern; n/a not applicable.
Coil resistance: ohms of both coils in series, or one coil if single coil clock.
Case if not dome: numbers match list in text above from Reason catalogue.

Clocks marked ‘Known to exist in 1980’ were listed when ‘JH’ published a call for serial numbers in Antiquarian Horology Autumn 1980.

No.	Type	Hand	Coil size	Coil colour	Dial	Dial rims	Dial fix	Num. col	Min mark	Dial paint	Wires fixed	Turns spring	Base	coil ohms	Case	Other features	History
35	LW	FdL	L	G	C *	O	P	R B	R	*	NC	8	78	25.7		dial numerals ? on original transfer, no glue, ? Never had paper.	owned from 1990's
46	P	FdL	?S	G	SW	n/a	n/a	R B	R	n/a	n/a	n/a	n/a		1	type metal bob	

No.	Type	Hand	Coil size	Coil colour	Dial	Dial rims	Dial fix	Num. col	Min mark	Dial paint	Wires fixed	Turns spring	Base	coil ohms	Case	Other features	History
60	P	none			C	N	S	R B	R		n/a	n/a	n/a		3		sold at Schmitt Horan lot 143 May 18/19 2019
61	P	FdL			SW	N	S	A B	D		n/a	n/a	n/a				Christies lot 88 at sale 7103 2005
66	P	FdL	L	G	E	n/a	n/a	R	R		n/a	n/a	n/a			arch wood mantle case not in brochure	
146	P	FdL	L		SW	B	P	A B	D		n/a	n/a	n/a		3		
167	P	FdL	L	G	E	O	n/a	R	R	F	n/a	n/a	n/a			4 glass brass case similar to no.4	
199	LW	FdL	L	G	PB	O	P	R B	R		NC		78	22.2		Spring replaced	owned from 1990's
203																Known to exist in 1980	
204																Known to exist in 1980	
206	LW	S	L	G	PB	I	P	R B	R			7.5				inset retailer disk for Mappin and Webb in the base	
207	LW	FdL	L	G	C	N	P	R W	D			9					Science Museum reference 1989-176
219	LW	FdL	L	G	CG	O	P	R B	R	B	NC	8.5	CC	29.5		retailers disk inset in base, Goldsmiths and Silversmiths Company, Regent St London ? spring replaced	

No.	Type	Hand	Coil size	Coil colour	Dial	Dial rims	Dial fix	Num. col	Min mark	Dial paint	Wires fixed	Turns spring	Base	coil ohms	Case	Other features	History
231	LW	FdL	S	B	CG	N	P	R B	R			7					sold at Schmitt Horan lot 128 May 18/19 2019
238	LW	FdL	S	B	C	N	springs	R B	R			9				Clock has two narrow springs	Previously at a London auction house with two springs
239																	Known to exist in 1980
251 or 25?	LW	FdL	L	G	?PB	B	P	R B	R								sold at Gardiner Houlgate lot 1124 on 24.10.18
257	LW	FdL	S	C	C	O	P	R W	D	F		7	F				owned for 50 years or more
265	LW	FdL	S	G	PT	N	P	A B	D		NC	8	F	27		white painted dial looks v old and ? Original	
268	LW	FdL	S	G	C	N	P	R W	D			8				described in Timmer Menno paper	sold at Christies 17 Mar 2015 lot 317
270																	Known to exist in 1980
272																	Known to exist in 1980
277	LW	S	L	G	PB	N	P	A B	R		N	8.5	F			No Murday Reason plate, instead one for Rashleigh Phipps and Co 147 Oxford Street	
280	LW	PC	L	G	PT	N	P	R B	N			7.5					

No.	Type	Hand	Coil size	Coil colour	Dial	Dial rims	Dial fix	Num. col	Min mark	Dial paint	Wires fixed	Turns spring	Base	coil ohms	Case	Other features	History
294	LW	FdL	L	G	C	O	P	R G	D		NC	8.5	F	27.4		Dial painting ? Restored	
308	LW	FdL	S	G	PB	B	P	R B	R			8				known original clock	
311	LW	FdL	S	G	C	B	P	R B	D	B	R	8	CC				
332	LW	FdL	L	G	PB	N	P	A B	R	B	Y	6	78	30.6			
334	LW	FdL	L	G	C	O	P	R G	R		NC	7	78				
335	LW	FdL	L	G	C	N	P	R B	R		NC	7	78				
336	SW	?	1 L	G	ES	n/a	n/a	A	R		n/a	7	n/a	11.4		wood mantle case, inlaid	
338	SW	FdL	1L	G	?	n/a	n/a	R B	R		n/a	n/a	n/a			Probably a mantle case	info from nawcc web https://mb.nawcc.org/threads/can-someone-tell-me-anything-about-this-clock-murday-type.96020/
355	LW	FdL	L	G	PB	B	P	A B	D	B		7		27		no makers plate, holes present	clock possibly retailed by Prouds

No.	Type	Hand	Coil size	Coil colour	Dial	Dial rims	Dial fix	Num. col	Min mark	Dial paint	Wires fixed	Turns spring	Base	coil ohms	Case	Other features	History
356	LW	FdL	L	B	PB	B	P	A B	D								in Watts On March 2020
364	SW	S	1L	G	PB	n/a	n/a	R G	D		n/a	9	n/a	12.3			
368	SW															Mentioned in N Heckenberg's paper on Mk2 Murday in Australia	
482	LW	FdL	L	G	C	N	P	R B	R	B	yes	7	F	21			
?	LW	FdL			CG	B	P	A B	D			7				Provenance, presented by a member of the Reason family and passed by descent to seller	sold at Sotheby's 14 Dec 2006
?	Inter-mediate	FdL	1L	G	glass	I	P	R B	R			?7				intermediate clock, single coil direct impulse like Mk2, large balance & movement, narrow spring	Sold at Christies sale 6070 in Nov 1998 lot 399 (Cleator sale)