

CHARLES

FRODSHAM

PRECISE TIME

TWO CENTURIES IN THE MAKING

THE EXHIBITS

DESCRIBED BY

Richard Stenning


84. STRAND
WATCH &
CLOCK
MAKERS
TO THE QUEEN.
CHARLES
FRODSHAM
CHAS FRODSHAM & Co
84 STRAND. 84
CHARLES FRODSHAM

ACKNOWLEDGEMENTS

The programme of annual temporary displays dedicated to individual makers offers a valuable opportunity to reunite important objects that are normally dispersed among private collections and seldom accessible to the public. The organisers are grateful to the Royal Collection Trust (on behalf of His Majesty The King), the Harris (Belmont) Charity, and Charles Frodsham & Co. for their generous support through the loan of these exceptional items, which has made this exhibition possible.

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Warm thanks are owed to the Master, Dr Robert Lamb, the Wardens, the Company Clerk, and the Members of the Court of the Clockmakers' Company. Their support and commitment have been essential to the realisation of this exciting display.

Andrew Canter
Chairman, Collections Committee
Worshipful Company of Clockmakers

Photographic Acknowledgements:
All photos © Charles Frodsham & Co., London, except where indicated.
Permission thanks to Colin Crisford, David Penney and Harris (Belmont) Charity, Science Museum Group Collection, London, and Institution of Civil Engineers for the use of their images.


115. CHAS. FRODSHAM & CO. LTD late of 84. Strand
BY APPOINTMENT TO
H.R.H. THE PRINCE OF WALES
FRODSHAM
FRODSHAM
Chas Frodsham late of 84 Strand
FRODSHAM
115. New Bond St. W.

INTRODUCTION

In this, the third in the series of annual displays in the Clockmakers' Museum at the Science Museum, we turn our attention to Charles Frodsham, a name synonymous with precision timekeeping for almost two centuries. This exhibition, *Charles Frodsham, Precise Time: Two Centuries in the Making,* explores the enduring contribution of the company to horology, from the age of railways and maritime navigation to the highly specialised mechanical watchmaking of today.

Founded in 1834, the company emerged at a time when Britain's expanding industrial, scientific and imperial activities demanded ever-greater accuracy in the measurement of time. Reliable timekeeping was fundamental to navigation, astronomy, communications and transport, and Charles Frodsham quickly established an international reputation for excellence in the production of chronometers, regulators, fine watches and clocks. The firm's work was widely recognised during the great international exhibitions of the nineteenth century, where it received numerous awards and distinctions, reflecting both technical innovation and the highest standards of craftsmanship.

Central to this display is the story of how precision timekeeping shaped the modern world. Among the historic highlights are a record-holding watch tested at Kew Observatory, marine chronometers supplied for Admiralty service on naval and scientific voyages, and important domestic and ceremonial clocks, including the silver humpback timepiece made for Her Majesty Queen Elizabeth II to celebrate her Diamond Jubilee in 2012. These objects illustrate not only technical achievement but also the trust placed in the firm's work at the highest levels of national and international life.

The display also brings the story into the present day. In the early 2000s, the company undertook the ambitious task of adapting the double impulse chronometer escapement into a wristwatch. The resulting Double Impulse Chronometer watch represents a rare synthesis of traditional hand skills and contemporary engineering. Examples in the exhibition, together with material illustrating their manufacture in the firm's English workshop, show how historic principles of chronometer making continue to inform cutting-edge mechanical watchmaking.

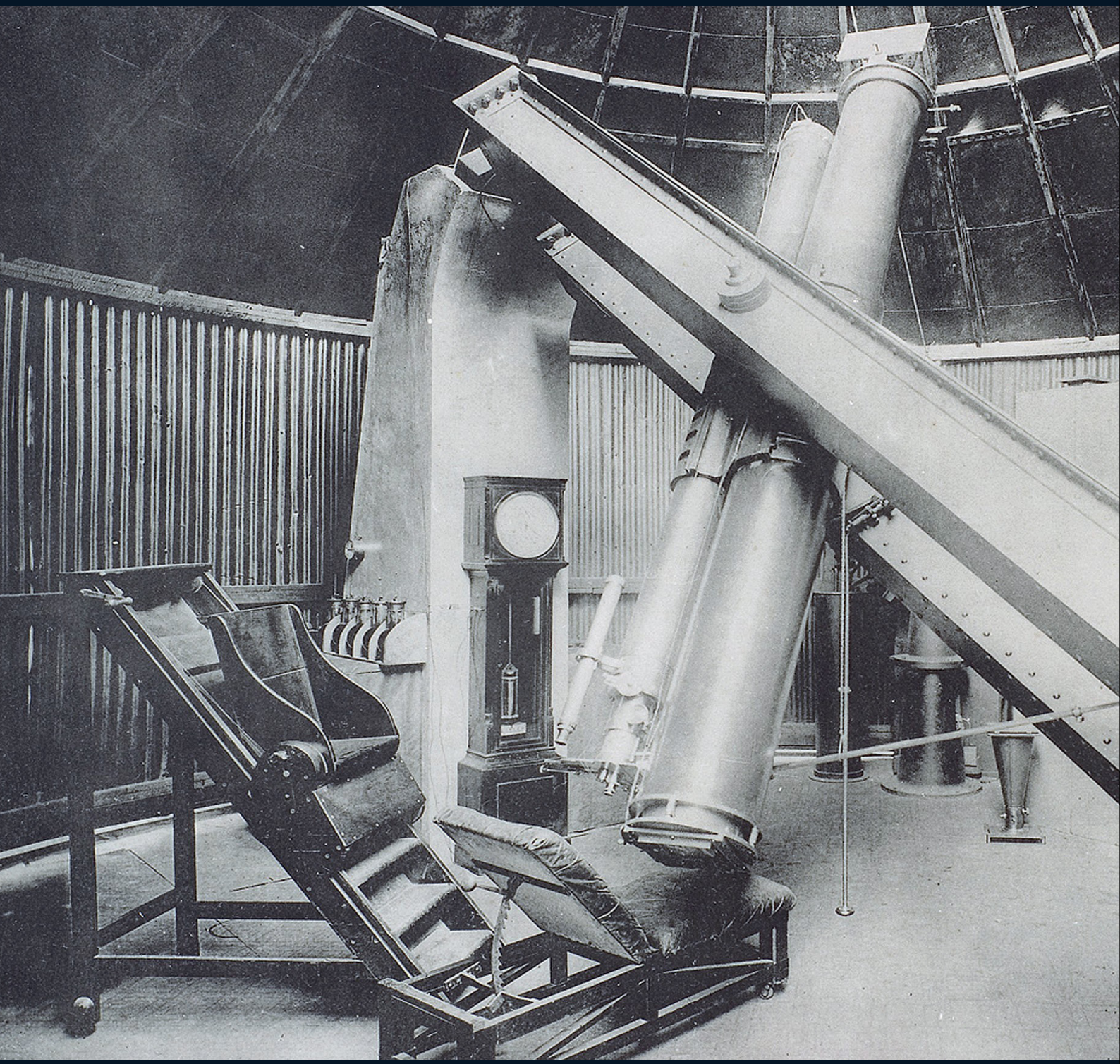
This exhibition highlights the remarkable continuity of a firm that has helped define standards of precision for nearly two hundred years. In doing so, it reflects the wider mission of the Clockmakers' Museum, to promote the understanding of horology and to inspire future generations to value both its scientific importance and its craft traditions.

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A regulator in use at Red Hill Observatory, Sydney, 1892

Image: Wikipedia

PRECISION TIMEKEEPING IN THE 1800s

The need for accurate time in civilian life grew ever more important with the advent of railways and industrialisation. Precision clocks, known as regulators, enabled astronomers to observe and map stars to determine time. They also served as primary timekeepers in workspaces and large homes, from which other clocks and watches could be set. Charles Frodsham supplied observatories and businesses worldwide with high-quality regulators.

1 Charles Frodsham
Small mahogany regulator
London, c.1835

Case: Finely figured mahogany case with panelled trunk door, raised on an inset panelled plinth. The flat-topped hood with dentil decoration.

Dial and hands: Silvered dial with outer Arabic minute chapter enclosing subsidiary dials for seconds, with observatory markings, and Roman hour chapter. The centre with later engraved cyphers, and signed *CHARLES FRODSHAM, / SUCCESSOR TO / ARNOLD / AD. 1843. and CHARLES FRODSHAM, / SUCCESSOR TO / B.L. VULLIAMY / AD. 1854.* Blued steel hands.

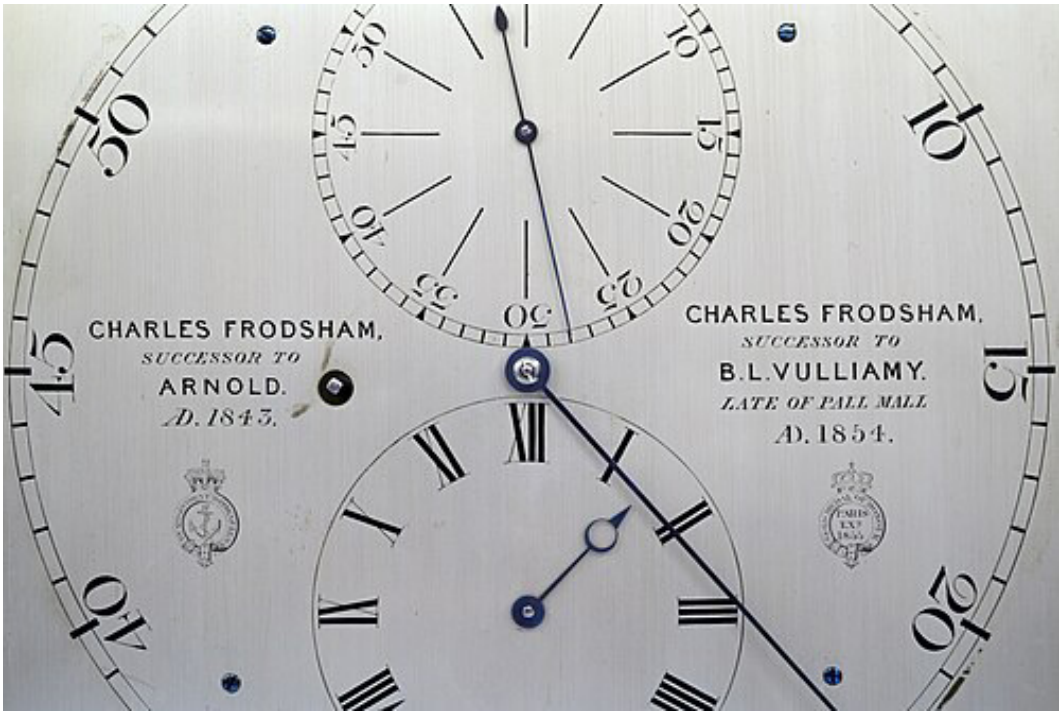
Movement: Weight driven, 8-day, 5-pillar, brass plate movement with high-count train, maintaining power, deadbeat escapement and later fitted with Charles Frodsham's hermetically sealed brass-cased glass-jar mercury pendulum with steel rod.

Dimensions: 1830 x 390 x 230mm

Notes: This clock served as the Frodsham shop regulator and bears the names of Arnold and Vulliamy, whose renowned firms were acquired by Charles Frodsham.

L2026-16 Lent by Charles Frodsham & Co., London

Charles Frodsham
Small mahogany regulator dial detail



GREENWICH TIME

THE UNIVERSAL

STANDARD OF TIME

THROUGHOUT

GREAT BRITAIN.

By Charles Frodsham

LONDON:

EDWARD BAXTER, 79, STRAND.

1848.

STANDARDISING TIME

Throughout the 1800s, towns set their clocks by the sun, meaning time varied by location. In 1847, to simplify timetables, railways adopted a single standard based on Greenwich time. Charles Frodsham recognised the inconvenience of maintaining two separate times and lobbied for a single national standard. However, it was not until 1880 that Great Britain officially chose Greenwich Mean Time as its legal standard.

Image © Institution of Civil Engineers

2 Charles Frodsham & Co.
Latitude and longitude ready reckoner
London c. 1890

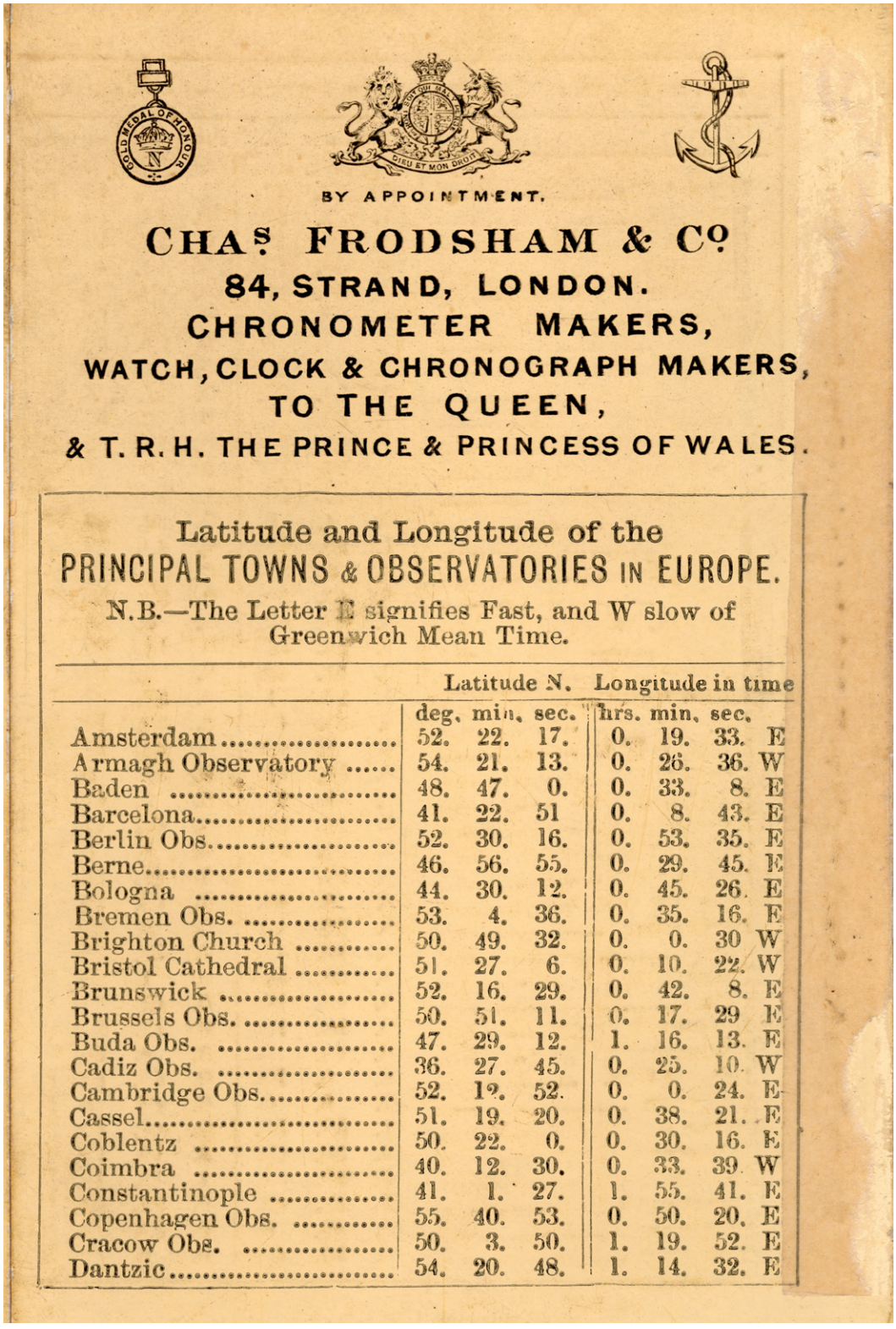
Object: Printed card ready reckoner giving the latitude and longitude of the principal towns and observatories in Europe and the U.S.A.

Dimensions: 90mm x 120mm

Notes: Produced in wallet-size to aid the determination of Universal Time when travelling.

L2026-15 Lent by Charles Frodsham & Co., London

Charles Frodsham & Co.
Latitude and longitude ready reckoner



BY APPOINTMENT.

CHAS FRODSHAM & Co

84, STRAND, LONDON.

CHRONOMETER MAKERS,

WATCH, CLOCK & CHRONOGRAPH MAKERS,

TO THE QUEEN,

& T. R. H. THE PRINCE & PRINCESS OF WALES.

Latitude and Longitude of the PRINCIPAL TOWNS & OBSERVATORIES IN EUROPE.

N.B.—The Letter E signifies Fast, and W slow of Greenwich Mean Time.

	Latitude N.			Longitude in time			
	deg.	min.	sec.	hrs.	min.	sec.	
Amsterdam	52.	22.	17.	0.	19.	33.	E
Armagh Observatory	54.	21.	13.	0.	26.	36.	W
Baden	48.	47.	0.	0.	33.	8.	E
Barcelona	41.	22.	51	0.	8.	43.	E
Berlin Obs.	52.	30.	16.	0.	53.	35.	E
Berne	46.	56.	55.	0.	29.	45.	E
Bologna	44.	30.	12.	0.	45.	26.	E
Bremen Obs.	53.	4.	36.	0.	35.	16.	E
Brighton Church	50.	49.	32.	0.	0.	30	W
Bristol Cathedral	51.	27.	6.	0.	10.	22.	W
Brunswick	52.	16.	29.	0.	42.	8.	E
Brussels Obs.	50.	51.	11.	0.	17.	29	E
Buda Obs.	47.	29.	12.	1.	16.	13.	E
Cadiz Obs.	36.	27.	45.	0.	25.	10.	W
Cambridge Obs.	52.	12.	52.	0.	0.	24.	E
Cassel	51.	19.	20.	0.	38.	21.	E
Coblentz	50.	22.	0.	0.	30.	16.	E
Coimbra	40.	12.	30.	0.	33.	39	W
Constantinople	41.	1.	27.	1.	55.	41.	E
Copenhagen Obs.	55.	40.	53.	0.	50.	20.	E
Cracow Obs.	50.	3.	50.	1.	19.	52.	E
Dantzic	54.	20.	48.	1.	14.	32.	E

3 Charles Frodsham & Co.
18ct gold lever watch, No. 09753
London 1912

Case: Slim gold crystal case, with engine-turned back and gold dome. London hallmarked for 1912, Sponsor's mark RN – Robert North.

Dial and hands: Solid silver dial with engine-turned centre, Roman numerals, gold seconds chapter and plaque at XII signed *Frodsham*. Blued steel Breguet hands.

Movement: Keyless, gilt, three-quarter plate movement with going barrel. Jewelled to the centre in screwed-in settings, with cap jewels on the escape, lever, and balance (diamond). Single roller lever escapement with steel club-tooth escape wheel, tuning-fork lever, split bi-metallic compensation balance, and blued steel balance spring with overcoil. The top plate with engraved royal and honour cyphers, and signed *Cha^{s} Frodsham / 27 South Molten St / LONDON / BY APPOINTMENT TO THE KING / AD Fmsz / No. 09753.*

Dimensions: Diameter 52mm.

Notes: This type of high-grade dress watch was the height of fashion in the early 20th century.

L2026-14 Lent by Charles Frodsham & Co., London

Charles Frodsham & Co.
18ct gold lever watch, No. 09753



Image © David Penney



The Great Exhibition of 1851

Image: Science Museum Group Collection © The Board of Trustees of the Science Museum, London

AWARDING INNOVATION

From the 1850s onwards, international exhibitions became highly popular, showcasing new innovations and technology. Charles Frodsham exhibited at the 1851 Great Exhibition, where he was awarded a Prize Medal. This success led him to participate in further exhibitions worldwide. His technical expertise earned him invitations to also serve as a judge. In total, Charles Frodsham was awarded 12 exhibition medals.

4 Three International Exhibition medals awarded to Charles Frodsham

London 1862, 1867, 1871

Case: Mahogany board with blue velvet pad.

Objects:

- Bronze medal of Honour as Juror and Reporter, London 1862
- Gold first class medal, Naples 1871
- Bronze medal of Honour as English Juror, Paris, 1867

Dimensions: 70mm, 60mm, 80mm.

Notes: The international exhibitions in the 19th century brought together the best of art and science from across the world. Of large scale and open to the public they highlighted industrial, scientific and cultural progress. Charles Frodsham exhibited many advancements in horological artifacts including pocket watches, chronometers, and regulators.

L2026-4 Lent by Charles Frodsham & Co., London

Three International Exhibition medals
awarded to Charles Frodsham





THE OBSERVATORY AT KEW

BREAKING RECORDS

Towards the late 1800s, English watchmakers faced growing competition from overseas manufacturers. In response, Kew Observatory introduced trials in 1884 across three classes, to demonstrate the quality of English watches. These rigorous tests lasted up to 45 days and awarded marks to the best-performing timepieces. Charles Frodsham & Co. regularly submitted watches and achieved the highest mark ever awarded to an English watch at Kew.

5 Charles Frodsham & Co. 18ct gold lever watch with 1-minute tourbillon, No. 09182/11487

London c. 1907

Case: Gold crystal case with 5-knuckle joints, turning pendant, raised push piece, and gold dome engraved to the periphery *THE RECORD FOR ENGLISH WATCHES * KEW OBSERVATORY, FEB 1907 * "Especially good" WITH 93.9 MARKS *.* London hallmarked for 1907, Sponsor's mark HMF – Harrison Mill Frodsham.

Dial and hands: Silvered dial with sunk seconds, Roman numerals, state of wind indication at XII, and signed *FRODSHAM / 09182 / AD. Fmsz*. Blued steel spade hands.

Movement: Keyless, gilt, half plate, fusee and chain movement with raised barrel. Nicole Nielsen type 1 steel 1-minute tourbillon carriage, double roller lever escapement with English ratchet-tooth escape wheel, split bi-metallic compensation balance, and free-sprung blued steel balance spring with overcoil. The top plate with engraved royal and honour cyphers, and signed *Cha^{s} Frodsham / By Appointment TO THE King / 115, New Bond St^{t}, LATE OF 84 Strand, LONDON / AD. Fmsz / No. 09182/11487.*

Provenance:
1. Made for the Marquis of Bute.
2. Bought from Charles Frodsham & Co. by the 5th Lord Harris for £145 in 1944. Harris (Belmont) Charity.

Dimensions: Diameter 57mm.

Notes: No. 09182/11487 was submitted to the Kew Observatory trials by Nicole Nielsen & Co. and was tested between 2nd Oct – 15th Nov 1906. It was awarded a Class 'A' Especially Good certificate with 93.9 marks, placing it 1st in the top 50 watches tested that year. This mark remained the highest ever achieved by an English watch tested at the Kew Observatory.

L2026-25 Lent by courtesy of the Harris (Belmont) Charity

Charles Frodsham & Co. 18ct gold lever watch
with 1-minute tourbillon, No. 09182/11487



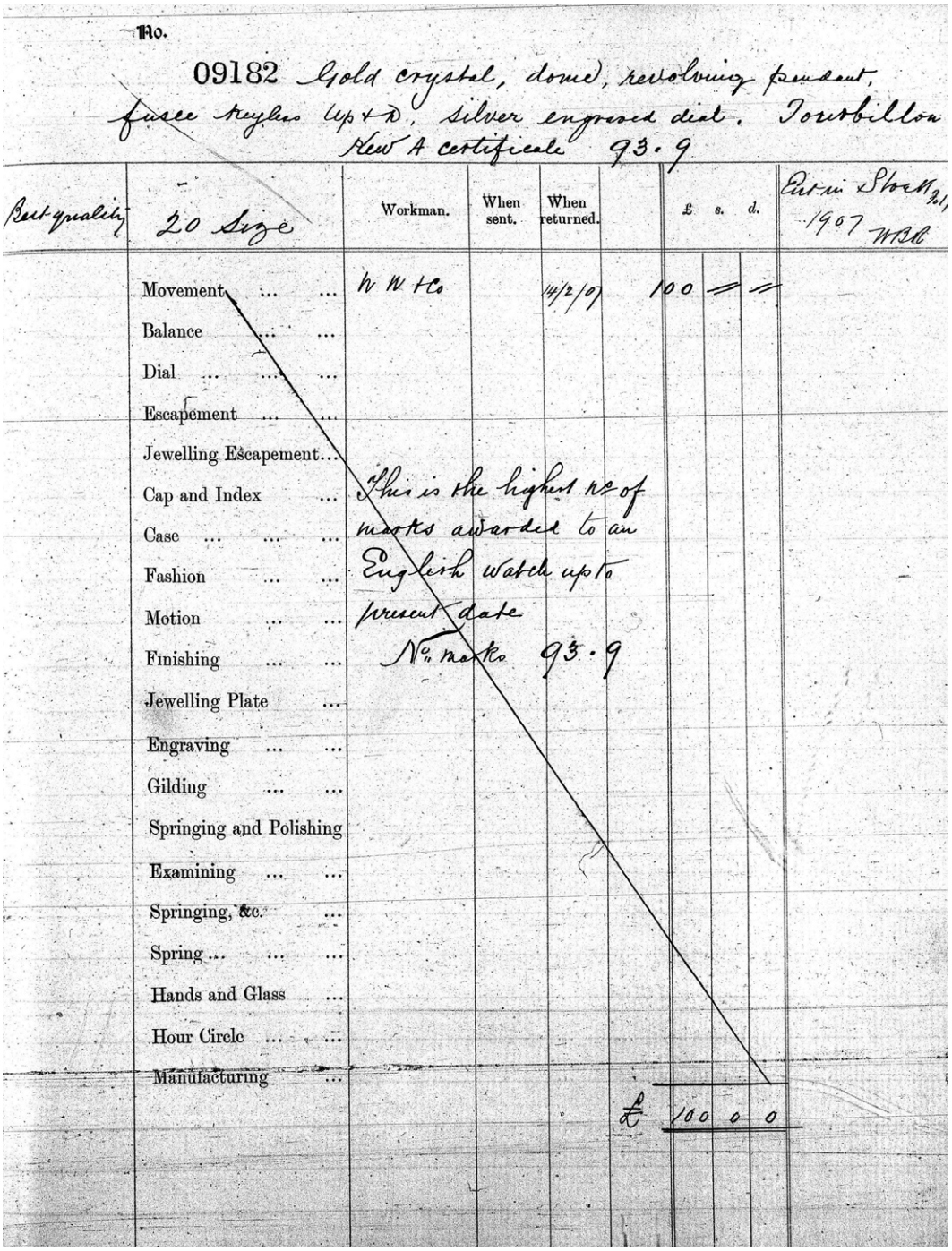
Image © Harris (Belmont) Charity

Charles Frodsham & Co. 18ct gold lever watch with 1-minute tourbillon, No. 09182/11487 showing engraved dome



Image © Harris (Belmont) Charity

The manufacturing record for Charles Frodsham & Co.
18ct gold lever watch with 1-minute tourbillon,
No. 09182/11487



No.

09182 Gold crystal, domed, revolving pendant, fusee keyless up + D, silver engraved dial. Tourbillon
New A certificate 93.9

Best quality	20 Size	Workman.	When sent.	When returned.	£ s. d.	Entered Stock 2/1/1907 WBC
Movement		W W + Co		14/2/07	100	
Balance						
Dial						
Escapement						
Jewelling Escapement...						
Cap and Index ...						
Case						
Fashion						
Motion						
Finishing						
Jewelling Plate ...						
Engraving						
Gilding						
Springing and Polishing						
Examining						
Springing, &c. ...						
Spring						
Hands and Glass ...						
Hour Circle						
Manufacturing ...					£ 100 0 0	

This is the highest No of marks awarded to an English watch up to present date
No marks 93.9


CHAS: FRODSHAM LONDON

MEASURING THE WORLD

By the 1820s, the marine chronometer had become a vital tool for determining longitude. As well as enabling safe navigation at sea they were used for surveying and mapmaking. Charles Frodsham, as one of London's leading manufacturers, supplied chronometers for 19th century voyages of exploration and scientific research. The company also produced explorer's watches with water-resistant, dustproof cases suited to the harshest climates.

6 Charles Frodsham
Admiralty-issue 2-day chronometer, No. 1842
London c. 1841

Case: Small plain mahogany three-tier case with drop handles. The centre section with rectangular ivory tablet signed *CHARLES FRODSHAM / 84 Strand / London / TWO DAYS.* The lower section with round ivory tablet engraved 1842

Dial and hands: Silvered dial with Roman numerals, subsidiary dials indicating state of wind and seconds. Signed *CHARLES FRODSHAM / 7 Pavement Finsbury Squ^r^ / London No. 1842* and engraved with Admiralty broad arrow. Blued steel fleur-de-lys hands

Movement: Full plate, 4-pillar, fusee and chain movement. Earnshaw spring detent escapement, free-sprung bi-metallic compensation balance, blued steel helical balance spring and diamond endstone. The top plate signed *Charles Frodsham London*. Brass bayonet dust cap. In a brass bowl gimballed in the case.

Dimensions: 140 x 140 x 140mm.

Notes: One of 60 Charles Frodsham marine chronometers trialled at Greenwich and purchased by the Admiralty. No. 1842 was bought on March 6th 1841 and then issued to H.M.S. *Wilberforce*. It continued in service with the Royal Navy on five ships, and notably was used to conduct a survey of the West Coast of England in 1889. It was de-commissioned in 1922 and sold to Messrs. Usher & Cole.

L2026-20 Lent by Charles Frodsham & Co., London

Charles Frodsham
Admiralty-issue 2-day chronometer, No. 1842



7 Charles Frodsham
Admiralty-issue 2-day chronometer, No. 3178
London c. 1859

Case: Brass-bound rosewood two-tier case with drop handles. The centre section with circular ivory tablet signed *CHARLES FRODSHAM / 84 Strand / LONDON / No. 3178*. The lower section with round ivory tablet engraved *TWO DAYS* and with the Admiralty broad arrow. [Lacking top lid and one handle].

Dial and hands: Silvered dial with Roman numerals and subsidiary dials indicating state of wind and seconds. Signed With *Airy's Compensation / CHARLES FRODSHAM / 84 STRAND LONDON. / No. 3178.* and engraved with royal and exhibition cyphers and Admiralty broad arrow. Blued steel spade hands.

Movement: Full plate, 4-pillar, fusee and chain movement. Earnshaw-spring detent escapement, free-sprung bi-metallic compensation balance with wedge weights and Airy's Bar compensation, blued steel helical balance spring and diamond endstone. The top plate signed *Charles Frodsham London*. and engraved with the Admiralty broad arrow. In a numbered brass bowl gimballed in the case.

Dimensions: 170 x 150 x 170mm.

Notes: Taken in exchange by the Admiralty for Arnold No. 417 and £30, 5th Dec 1859. This chronometer saw service with the Royal Navy for 65 years and was used as the *mean solar half-seconds chronometer* on the Kergulean archipelago in the southern Indian ocean, for the transit of Venus observations of December 1874. This transit was the first ever to be filmed.

Transits of Venus, when Venus passes directly between the Sun and the Earth, occur in pairs, separated by eight years. These pairs are alternately spaced by 105.5 and 121.5 years, forming a cycle that repeats every 243 years. These transits can be used to accurately calculate the distance from Earth to Venus, and hence the distances to other bodies in the solar system can be determined.

The first transit of Venus was observed in 1639. The second pair of transits was in June 1761 and 1769, then December 1874 and 1882, and the last to occur, in June 2004 and 2012.

L2026-12 Lent by Charles Frodsham & Co., London

Charles Frodsham
Admiralty-issue 2-day chronometer, No. 3178



8 Charles Frodsham & Co.
Silver lever watch, No. 09955
London c. 1925

Case: Silver crystal case with screw down back and protective winding cap on short chain. London hallmarked for 1925, Sponsor's mark
RN – Robert North.

Dial and hands: White enamel dial with sunk seconds, Roman numerals, and signed *CHA^{s} FRODSHAM / 09955 / AD. Fmsz.* Blued steel spade hands.

Movement: Keyless, gilt, half-quarter plate movement with raised going barrel. Jewelled to the third wheel in screwed in settings, with cap jewels on the escape, lever, and balance (diamond). Single roller lever escapement with English ratchet-tooth escape wheel, tuning-fork lever, split bi-metallic compensation balance, and blued steel balance spring with overcoil. The raised barrel signed *Cha^{s} Frodsham, the top plate engraved 27 So Molten St London / By Appointment to the King / No. 09955.*

Dimensions: Diameter 58mm

Notes: With water-resistant and dustproof cases, Explorer's or Traveller's watches were suitable for all climatic conditions. Made by Nicole Nielsen these watches were available with fusee and state of wind indication, or with going barrel and no wind indication.

L2026-19 Lent by Charles Frodsham & Co., London

Charles Frodsham & Co.
Silver lever watch, No. 09955




CHAS: FRODSHAM LONDON

GIFTING TIME

Timepieces have long been given to commemorate important milestones in life. Charles Frodsham & Co. supplied high-grade clocks and watches for customers marking such occasions. The financier and watch collector John Pierpont Mongan regularly purchased Frodsham watches as gifts to his friends and new directors of his family's firm. These were amongst the most complicated English watches produced at the time.

9 Charles Frodsham & Co. 18ct gold minute repeating, split seconds and minute chronograph lever watch with 1-minute tourbillon, No. 08920

London c. 1902

Case: Gold crystal case with 5-knuckle joints, turning pendant, raised push piece, repeat slide and split chronograph button. Gold dome engraved *W. P. H. / FROM / J. P. M. / 1903*. London hallmarked for 1902, Sponsor's mark HMF – Harrison Mill Frodsham.

Box: leather with purple plush velvet watch holder and white silk to the inside of the lid in gilt lettering *CHARLES FRODSHAM & C^{O} LTD / TO THE KING / 115, NEW BOND S^{TR} / LONDON. W.* below a crown.

Dial and hands: Venetian tint enamel dial by Willis, with Roman numerals, subsidiary sunk dials for running seconds at III and minute recording at IX, and signed *CHA^{S} FRODSHAM / 08920 AD.Fmsz*. Blued steel spade hands, gilt and blued steel chronograph hands.

Movement: Keyless, gilt, half plate movement with going barrel and jewelled through-out. Nicole Nielsen type 2 steel 1-minute tourbillon carriage, double roller lever escapement with English ratchet-tooth escape wheel, split bi-metallic compensation balance, and free-sprung blued steel balance spring with overcoil. Repeating on two gongs.
The chronograph work mounted on the top plate. The cover plate signed *Cha^{S} Frodsham / 115, NEW BOND STR^{T}, LATE OF 84 Strand, LONDON / No. 08920*. The top plate engraved *BY / APPOINTMENT / TO THE KING / AD Fmsz.*

Provenance:
1. Presented to William Gould Harding by JP Morgan. Harding later became one of the original members of the US Federal Reserve Board, and served as its second Chairman between 1916-1922.
2. The Sir Harry Djanogly collection.

Dimensions: Diameter 63mm.

Notes: J.P. Morgan's tradition of buying Charles Frodsham pocket watches began in 1854. Between 1854 and 1934, the Morgan family acquired about 50 watches, often gifting the Frodsham/JPM tourbillon models as a "golden welcome" to new bankers.

L2026-10 Lent by Charles Frodsham & Co., London

Charles Frodsham & Co.
18ct gold minute repeating, split seconds and minute chronograph lever watch with 1-minute tourbillon, No. 08920



10 Cecilia Mendoza
Oil painting depicting the dial and movement of Charles Frodsham watch No. 08920

Paris 2025

Medium: Gilt framed, oil on canvas.

Dimensions: 620 x 500mm.

Notes: Cecilia Mendoza is an Italian-Argentinian artist whose commissioned work explores vintage watches and luxury objects. She began her artistic career in Buenos Aires in 2013, with an early exhibition inspired by Jorge Luis Borges. Her practice focuses on hyper-realistic oil paintings and detailed drawings of iconic timepieces, which have been shown in public and private collections internationally.

L2026-7 Lent by Charles Frodsham & Co., London

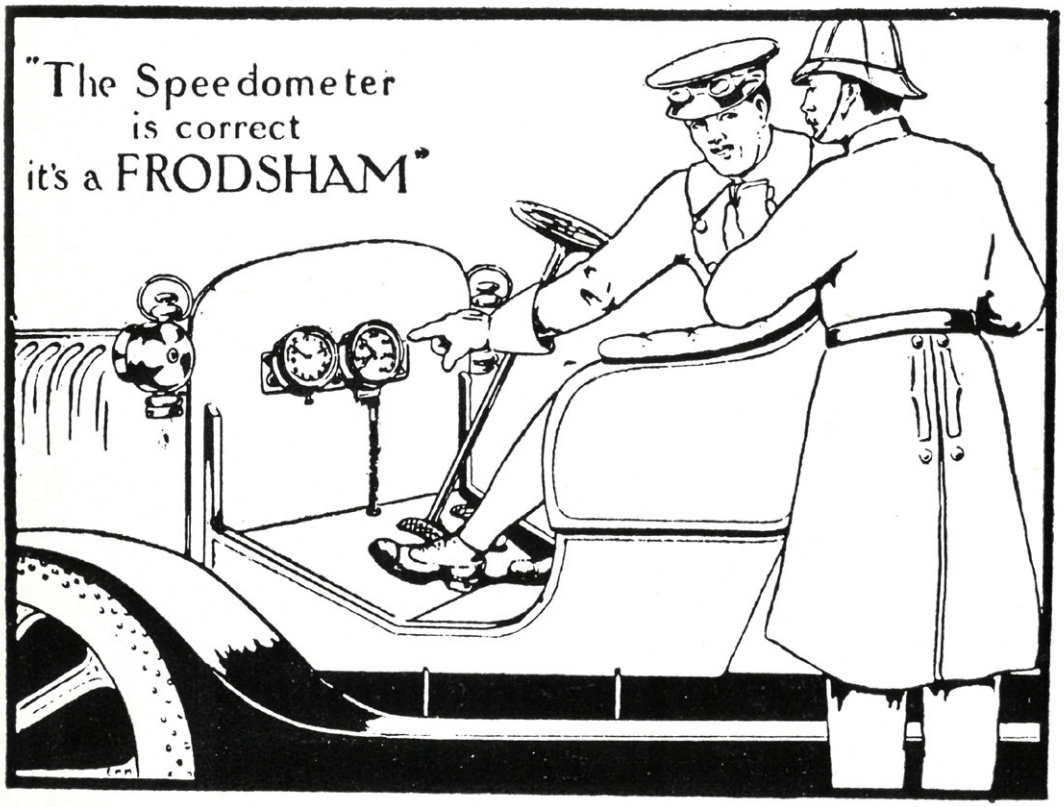
Cecilia Mendoza
Oil painting depicting the dial and movement
of Charles Frodsham watch No. 08920



CHAS. FRODSHAM & Co., Ltd.

WATCHMAKERS (by Appointment to H.M. the King).

115 NEW BOND ST., LONDON



AND

(Speedometers)

17 Dering St.,
London, W.

Fine Watches,
Clocks, and ::

ENGLISH

Speedometers,

from **£4 4/-**

SPEEDING INTO THE 20th CENTURY

As the new century dawned, new markets in timekeeping began to emerge. The rise in motor cars brought about higher speeds – and the need to control them. The modern world also demanded precise timing of short-duration events, such as the firing of projectiles. Charles Frodsham & Co. briefly tapped into these growing sectors, producing reliable and accurate car clocks, speedometers and timers.

11 Charles Frodsham & Co. Car clock

London c. 1920

Case: Patinated brass case with knurled bezel, and dashboard mounting bracket.

Dial and hands: Silvered dial with Roman numerals, and signed *C. Frodsham & C°. / 115 new Bond S^t^ / London / 8-DAYS / 401.* Blued steel spade hands.

Movement: 8-day, keyless, brass, 4-pillar movement with going barrel and platform lever escapement.

Dimensions: Diameter 105mm.

Notes: Considered as an accessory in the early days of motoring, this example is the larger size clock, Ref 401.

L2026-17 Lent by Charles Frodsham & Co., London

Charles Frodsham & Co.
Car clock



12 Charles Frodsham
Short duration timer
London c. 1915

Case: Nickelled-brass case with integral winding set on the back cover, and engraved with the Admiralty broad arrow. Stop, start and return to zero button in the pendant.

Dial and hands: Silvered dial with Arabic numerals, and signed *Chas Frodsham 27 South Molton St / No. 09588.* Whole seconds indicated on the outer chapter, subsidiary dials for 100th of a second and minute recording to the centre. Blued steel pointer hands.

Movement: Keyless, brass, three-quarter plate movement with 6 jewels, cylinder escapement and small balance beating 72,000/minute.

Dimensions: Diameter 62mm.

Notes: These fast-beating micrometer timers known as "Time of Flight" instruments were extremely accurate for timing the flight of projectiles. Early models indicated to 1/20th of a second, later models from 1899 onwards to 1/100th of a second.

L2026-11 Lent by Charles Frodsham & Co., London

Charles Frodsham
Short duration timer



13 Charles Frodsham
Car speedometer
London c. 1912

Case: Patinated brass case with a 'return to zero' lever for daily trip indication, and dashboard mounting bracket.

Dial and hands: Silvered dial with Arabic numerals. Outer chapter indicating miles per hour. Circular apertures to the centre for total mileage – measuring to 9999, and trip counter – measuring in 10ths of a mile. Signed *C. Frodsham & C^{o} / 17 Dering St London. Also marked with Patent N^{os} 14617-9 / 3647-10.*

Movement: pressed steel, centrifugal-type movement with governor spindle and weight. Speed indication hand controlled by a steel spiral spring. Total mileage indication positively driven by worm and spur gearing, the trip counter driven from the total mileage counter.

Dimensions: Diameter 90mm.

Notes: In 1911, Charles Frodsham & Co. opened a motor accessories department in Dering Street specialising in speedometers and catering to the burgeoning car market. The speed limit at the time, 20 miles per hour – often ignored, is indicated in red on the dial.

L2026-13 Lent by Charles Frodsham & Co., London

Charles Frodsham
Car speedometer





A ROYAL CONNECTION

In 1854, Charles Frodsham was appointed Superintendent and Keeper of Her Majesty's Clocks at Buckingham Palace, a role that placed him in charge of the upkeep of Queen Victoria's clocks and watches. The Company has maintained a royal connection for more than 150 years, with the production of timepieces that have been presented to members of the Royal Family on significant occasions and milestones.

14 Royal indenture given to Charles Frodsham
London 1854

Medium: Oak framed with gilt-brass fleur-de-lys mount, ink on paper, wax seal.

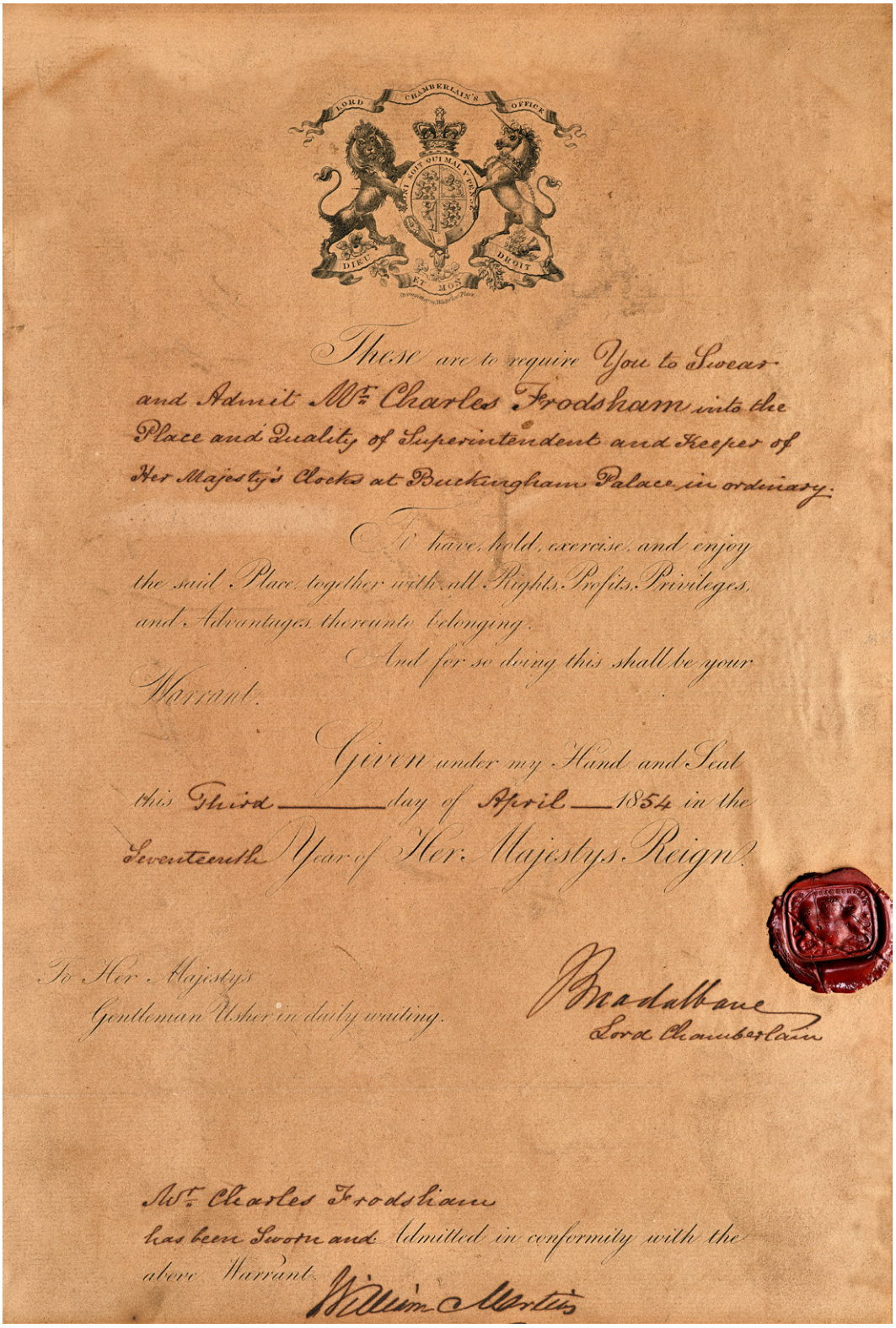
Dimensions: 465mm x 345mm.

Notes: This indenture, dated 3rd April 1854, was given to "...Admit Mr Charles Frodsham into the Place and Quality of Superintendent and Keeper of Her Majesty's Clocks at Buckingham Palace in ordinary". Signed and sealed by the Lord Chamberlain - John Campbell, 2nd Marquis of Breadalbane.

Charles Frodsham succeeded Benjamin Lewis Vulliamy as Superintendent and Keeper of the clocks at Buckingham Palace on the advice of the 7th Astronomer Royal, George Biddell Airy. When Charles died in 1871 his son Harrison Mill Frodsham succeeded him in the role.

L2026-6 Lent by Charles Frodsham & Co., London

Royal indenture given to Charles Frodsham



LORD CHAMBERLAIN'S OFFICE

DIEU ET MON DROIT

These are to require You to Swear and Admit Mr. Charles Frodsham into the Place and Duality of Superintendent and Keeper of Her Majesty's Clocks at Buckingham Palace in ordinary.

To have, hold, exercise, and enjoy the said Place, together with all Rights, Profits, Privileges, and Advantages thereunto belonging.

And for so doing this shall be your Warrant.

Given under my Hand and Seal this Third day of April 1854 in the Seventeenth Year of Her Majestys Reign.

To Her Majesty's Gentleman Usher in daily waiting.

Bradalbane
Lord Chamberlain

Mr. Charles Frodsham has been Sworn and Admitted in conformity with the above Warrant.

William Martin

15 Charles Frodsham
Hand written catalogue of the clocks in Buckingham Palace

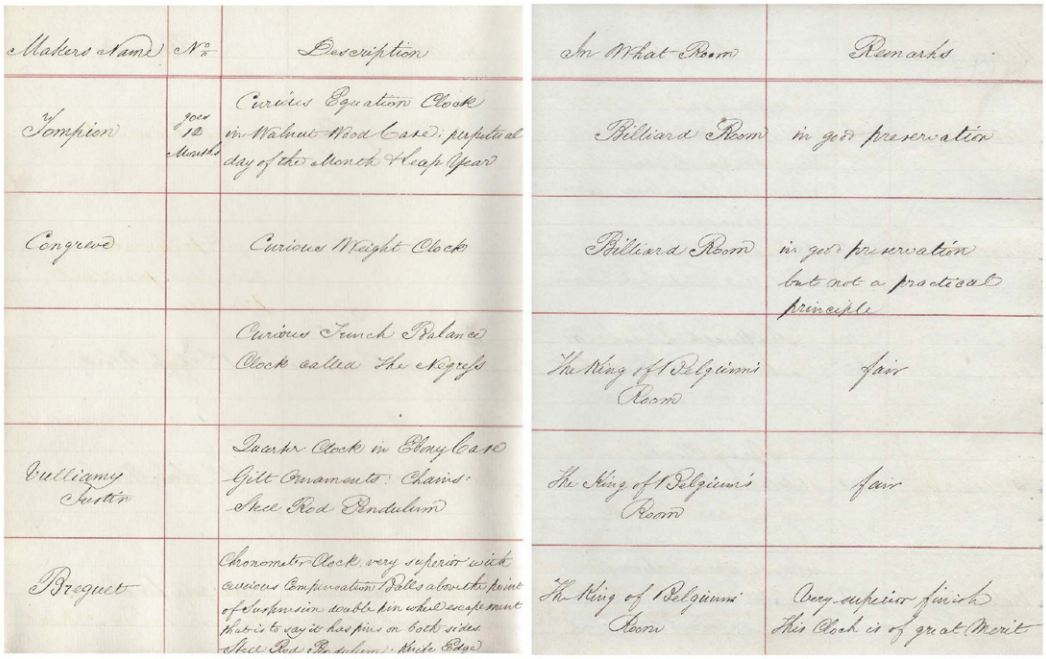
London 1854

Medium: Ink on lined note paper. Cover with stationer's label for E. Baxter, 79 Strand.

Dimensions: 235mm x 170mm.

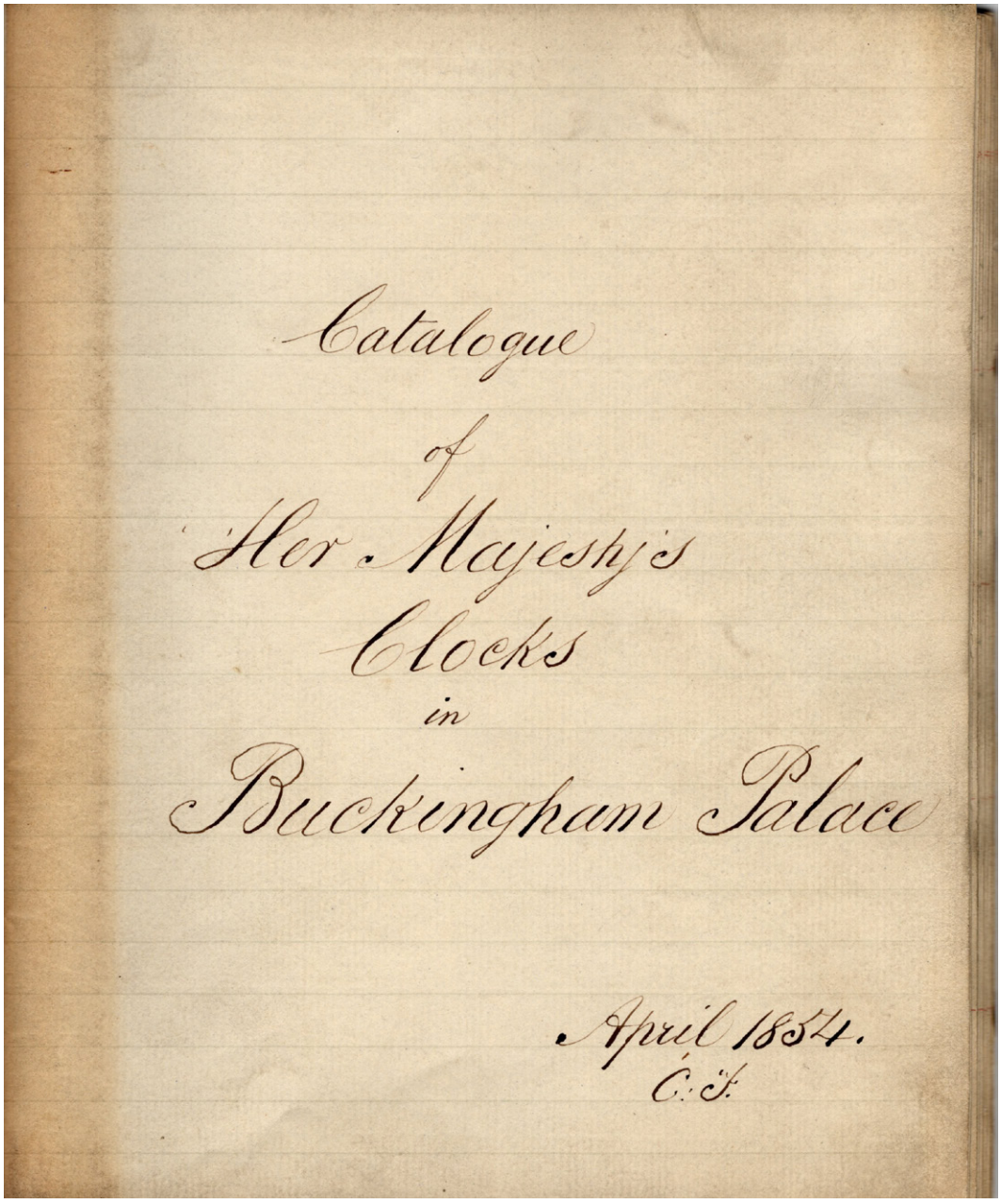
Notes: Upon Charles Frodsham's appointment as Superintendent and Keeper of the clocks at Buckingham Palace he conducted an inventory of all the clocks, noting the maker, any serial number, the location, and their condition.

L2026-8 Lent by Charles Frodsham & Co., London



Makers Name	No.	Description	In What Room	Remarks
Tompion	goes 12 Months	Curious Equation Clock in Walnut Wood Case: perpetual day of the Month & Leap Year	Billiard Room	in good preservation
Cengrave		Curious Wright Clock	Billiard Room	in good preservation but not a practical principle
		Curious French Balance Clock called the Negress	The King of Belgium's Room	fair
Williamy Forster		Quarter Clock in Ebony Case Gilt Ornaments Chaird: three Rod Pendulum	The King of Belgium's Room	fair
Breguet		Chronometer Clock very superior with curious Compensation Pallets above the point of Suspension double pin wheel escapement that is to say is has pins on both sides three Rod Pendulum Made by	The King of Belgium's Room	Very superior finish this Clock is of great Merit

Charles Frodsham
Hand written catalogue of the clocks in Buckingham Palace



16A Charles Frodsham & Co.
Silver humpback timepiece, No. 3086
London 2012

Case: Solid silver case with glazed back and silver shutters, ornate shaped handle, and concealed key drawer in the plinth. London hallmarked for 2012 with Jubilee mark, Sponsor's mark C.F. & C^{o}. L^{d}. – Charles Frodsham & Co. Ltd.

Dial and hands: Silvered dial with Roman numerals, and signed *CHAs. FRODSHAM / LONDON*, set within an engine-turned brass mask with engraved roundels for Queen Elizabeth II's cypher and the Clockmakers' Company coat of arms. Blued steel spade hands, of equal length.

Movement: 8-day, brass, 6-pillar, fusee and chain movement, with repurposed train wheels and pinions and platform lever escapement from a 1920s Charles Frodsham clock. The backplate with bronze winding and hand setting shrouds and curved aperture with blued steel and gold state of wind indication.
Signed *Charles Frodsham & Co / LONDON / FOR / THE WORSHIPFUL COMPANY / OF CLOCKMAKERS / AD 2012*

Provenance: Queen Elizabeth II.

Dimensions: 173mm high, 103mm wide, 73mm deep

Notes: Gifted to Her Majesty Queen Elizabeth II by the Worshipful Company of Clockmakers on the occasion of her Diamond Jubilee in 2012. Accompanied by a silver, blued steel and gold winding key, a silk-lined leather presentation case with silver mounts, and a gold-tooled leather presentation book.

L2026-3 Lent by His Majesty The King / The Royal Collection

On exhibition until the end of June 2026

Charles Frodsham & Co.
Silver humpback timepiece, No. 3086



Image © Colin Crisford

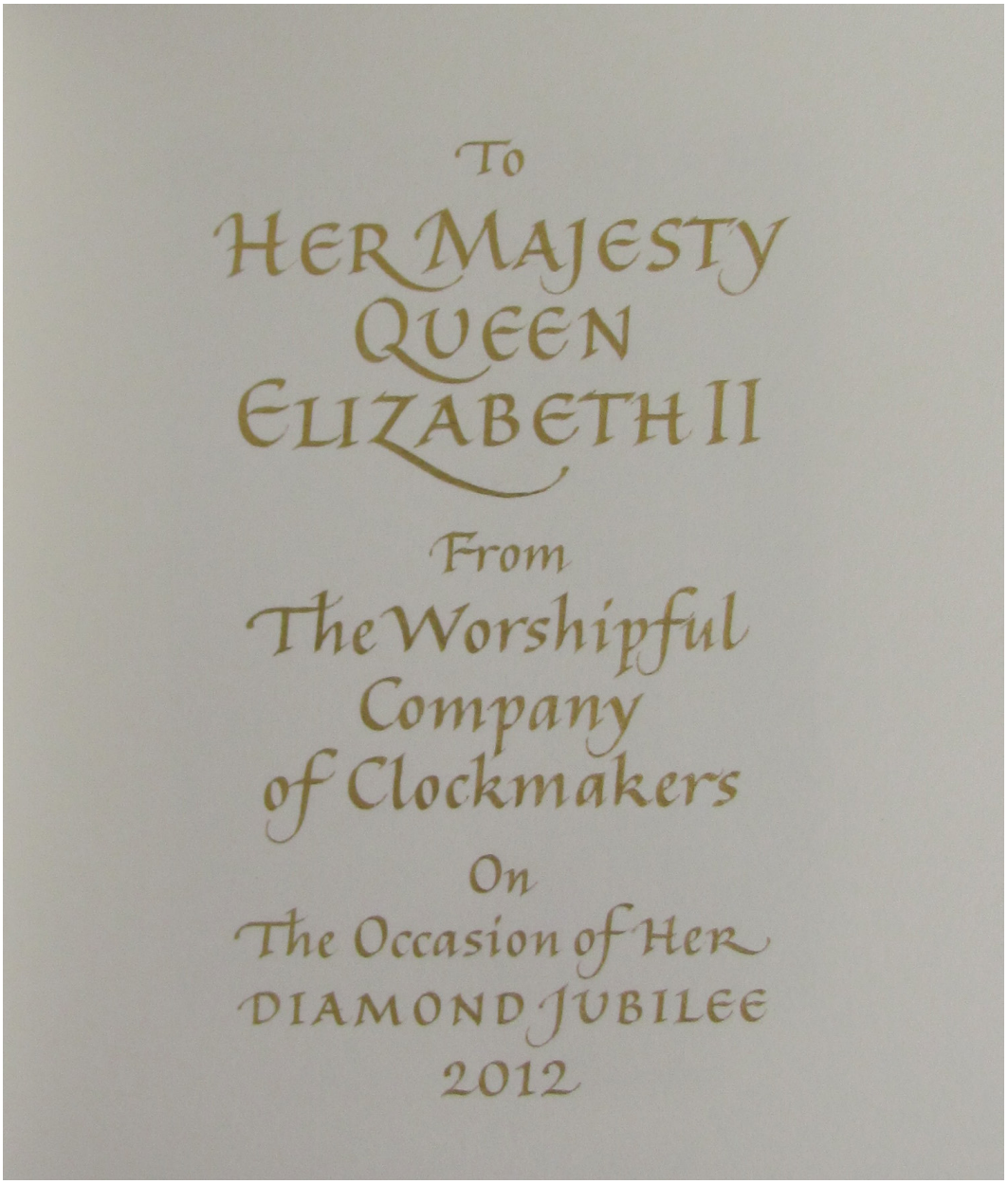
Charles Frodsham & Co.
Movement details of silver humpback timepiece, No. 3086





Images by Colin Crisford

Charles Frodsham & Co.
Front page of the presentation book given with silver humpback timepiece No. 3068



16B Charles Frodsham Gilt-metal cased humpback timepiece with perpetual calendar

London c. 1948

Case: Gilt-brass case, engine-turned panels to sides, top and hinged back door, ornate shaped handle, fluted bezel to front, wheatear and concealed bezel to rear. Raised on bun feet.

Dial and hands: Silver, engine-turned dial, with eccentric chapter, large moon phase indication above on a blued steel disc highlighted in gold and silver, and signed *FRODSHAM LONDON.* Set in a gilt-brass engine-turned mask with silver cartouche displaying apertures to indicate the day of the week, the date, and the month. Blued steel Breguet hands.

Movement: 8-day, brass, 4-pillar, fusee and chain movement, with platform lever escapement. The perpetual calendar mechanism mounted on the backplate.

Dimensions: 200mm high, handle up

Notes: One of three known Charles Frodsham & Co. perpetual calendar timepieces from the period, the first in a silver case was presented by The Mothers Union to Her Majesty Queen Elizabeth The Queen Mother [RCIN 2943] on the occasion of her Silver Wedding Anniversary in 1948.

L2026-9 Lent by Charles Frodsham & Co., London

On exhibition from the end of June 2026

Charles Frodsham
Gilt-metal cased humpback timepiece with perpetual calendar




10
CHA.S FROD
LONDO
CHAS. FRODSHAM LONDON

CHRONOMETER PRECISION, WRISTWATCH FORM

The start of the new millennium ushered in an ambitious new project for Charles Frodsham & Co.: to construct a wristwatch with chronometer-level accuracy, using traditional and contemporary material and techniques. Their design miniaturised the double impulse chronometer escapement, originally developed by George Daniels and based on Breguet's échappement naturel. Today, the company continues to research and develop new designs and innovations that retain their understated aesthetic, whilst reflecting two centuries of Frodsham's heritage.

17 Charles Frodsham & Co.
Prototype wristwatch movement
London 2008

Case: Milled and glazed aluminium block

Movement: Keyless, 16 ¼ line, 3hz, 2-train, with gold train wheels, 43 jewels and 41-hour power reserve with differential mechanism. The highly detached Double Impulse Chronometer escapement with titanium escape wheels and locking detent, free sprung copper-nickel-tin alloy balance with eccentric timing weights, and proprietary shock protection system. Two balance brakes, one to synchronise the mainsprings, the other a hack feature. The top plate signed *Chas. Frodsham / LONDON / ADFmsz.*

Dimensions: 58.5mm x 70.5mm x 20mm

Notes: Constructed for the BHI 150 exhibition at Upton Hall, Newark. A seminar programme celebrating the 150th anniversary of the British Horological Institute, 7-9 June 2008. Charles Frodsham & Co. also gave a talk titled *Independently Driven; a Work in Progress.*

L2015-4448 Lent by Charles Frodsham & Co., London

Charles Frodsham & Co.
Prototype wristwatch movement



18 Charles Frodsham & Co.
Double Impulse Chronometer wristwatch
London 2025

Case: Turned, milled and hand finished – grained and polished, 22ct yellow gold, London hallmarked.

Dial and hands: Ceramic dial, with sunken seconds and applied blued steel Arabic numerals. Vapour deposited *Cha^s Frodsham/London* signature, minute and seconds tracking, and cyphers. blued steel spade and poker hands, of equal length.

Movement: Keyless, 16 ¼ line, 3hz, 2-train, with gold train wheels, 43 jewels and 41-hour power reserve with differential mechanism. The highly detached Double Impulse Chronometer escapement with titanium escape wheels and locking detent, free sprung copper-nickel-tin alloy balance with eccentric timing weights, and proprietary shock protection system. Two balance brakes, one to synchronise the mainsprings, the other a hack feature. The top plate signed *Chas. Frodsham / LONDON / ADFmsz.*

Dimensions: Diameter 42mm.

Notes: The use of 22ct gold is synonymous with high-grade English pocket watches from the 18th century. At the time of the launch of the wristwatch in 2018, Frodsham were the only manufacturer offering 22ct as a case material option.

L2026-5 Lent by Charles Frodsham & Co., London

Charles Frodsham & Co.
Double Impulse Chronometer wristwatch



19 Charles Frodsham
Double Impulse Chronometer wristwatch
London 2025

Case: Turned, milled and hand finished – grained and polished, Titanium, London hallmarked.

Dial and hands: Ceramic dial with sunken seconds and applied blued steel Roman numerals. Vapour deposited *Cha^s Frodsham/London* signature, and minute and seconds tracking. Blued steel, spade and poker hands, of equal length.

Movement: Keyless, 16 ¼ line, 3hz, 2-train, with gold train wheels, 43 jewels and 41-hour power reserve with differential mechanism. The highly detached Double Impulse Chronometer escapement with titanium escape wheels and locking detent, free sprung copper-nickel-tin alloy balance with eccentric timing weights, and proprietary shock protection system. Two balance brakes, one to synchronise the mainsprings, the other a hack feature. The top plate signed *Chas. Frodsham / LONDON / ADFmsz.*

Dimensions: Diameter 42mm.

Notes: Titanium as a case material option was introduced to the Frodsham wristwatch range in 2024.

L2026-18 Lent by Charles Frodsham & Co., London

Charles Frodsham & Co.
Double Impulse Chronometer wristwatch



20 Charles Frodsham
18ct gold lever watch with 6-minute tourbillon, No. 08964

London 1903

Case: Gold crystal, 5-knuckle joints, turning pendant, raised push piece, gold dome inscribed *Colonel O. Haig, Ramornie.* London hallmarked for 1903, Sponsor's mark HMF – Harrison Mill Frodsham.

Dial and hands: Venetian tint enamel dial by Willis, with Arabic numerals, subsidiary seconds, and signed *CHA^{s} FRODSHAM / 08964 AD.Fmsz*. Blued steel spade hands, of equal length.

Movement: Keyless, gilt plate movement with going barrel and jewelled throughout in screwed in gold settings. Nicole Nielsen type 1 steel 1-minute tourbillon carriage, single roller lever escapement with English ratchet-tooth escape wheel, split bi-metallic compensation balance, and free-sprung blued steel balance spring with overcoil. The top plate with engraved royal and honour cyphers, and signed *Cha^{s} Frodsham / By Appointment TO THE King / 115, New Bond Str^{t} LATE OF 84 Strand, LONDON / No. 08964 / AD Fmsz.*

Provenance: Colonel O. Haig, Ramornie. Oliver Haig was commissioned Lieutenant in 1900 in the 7th (Queen's Own) Hussars, seeing service in the Boer War, before leaving the regiment. At the outbreak of WW1 he resumed service with the Remount Service training horses.

Dimensions: Diameter 60mm.

Notes: One of only two extant Frodsham watches with this dial layout. The dial of this watch, with hour and minute hands of equal length and numerals placed outside the minute track, inspired the dial design of the Frodsham wristwatch.

No. 08964, was submitted to the Kew Observatory trials and was tested between 1st Nov – 15th Dec 1903. It was awarded a Class 'A' Especially Good certificate with 89.8 marks, placing it 6th in the top 50 watches tested that year.

L2026-21 Lent by Charles Frodsham & Co., London

Charles Frodsham
18ct gold lever watch with 6-minute tourbillon, No. 08964




CHAS: FRODSHAM LONDON

THE MAKING OF A WRISTWATCH

Charles Frodsham & Co. is one of only a handful of UK-based independent watchmakers. Unlike mass-produced watches, which are assembled on production lines using parts often sourced from external suppliers, their watches are made from raw materials in a single workshop by ten watchmakers. Each component is machined and finished by hand and carefully checked to ensure its form and function are perfect.
The company produces up to 12 watches a year. This display sets out some of the processes involved in the making of their wristwatch.



A completed balance assembly,
made up of 23 separate parts



A balance bridge is hand-polished using
a traditional swing tool



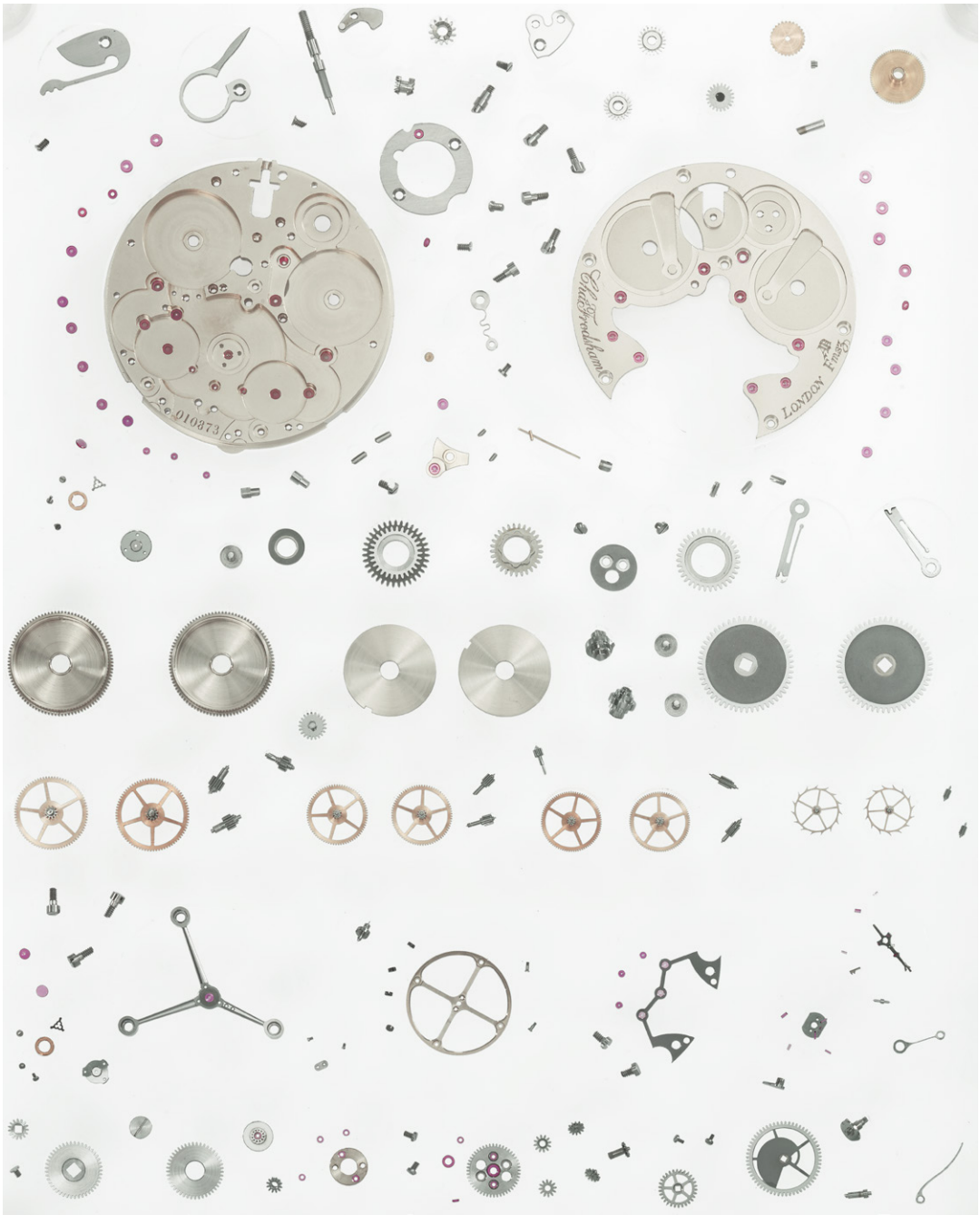
A watchmaker setting jewels
into a top plate

MOVEMENT MAKING

Charles Frodsham & Co. use both modern manufacturing techniques and traditional hand tools to make the parts of their wristwatch movements. Most raw components are produced on CNC and manual milling and turning centres from steel, titanium, copper alloys and gold. Each component is then hand finished, by black polishing, matting or graining, some to tolerances as fine as 3 microns.

21 The Double Impulse Chronometer wristwatch

All 184 components of the wristwatch movement,
manufactured by Charles Frodsham & Co.



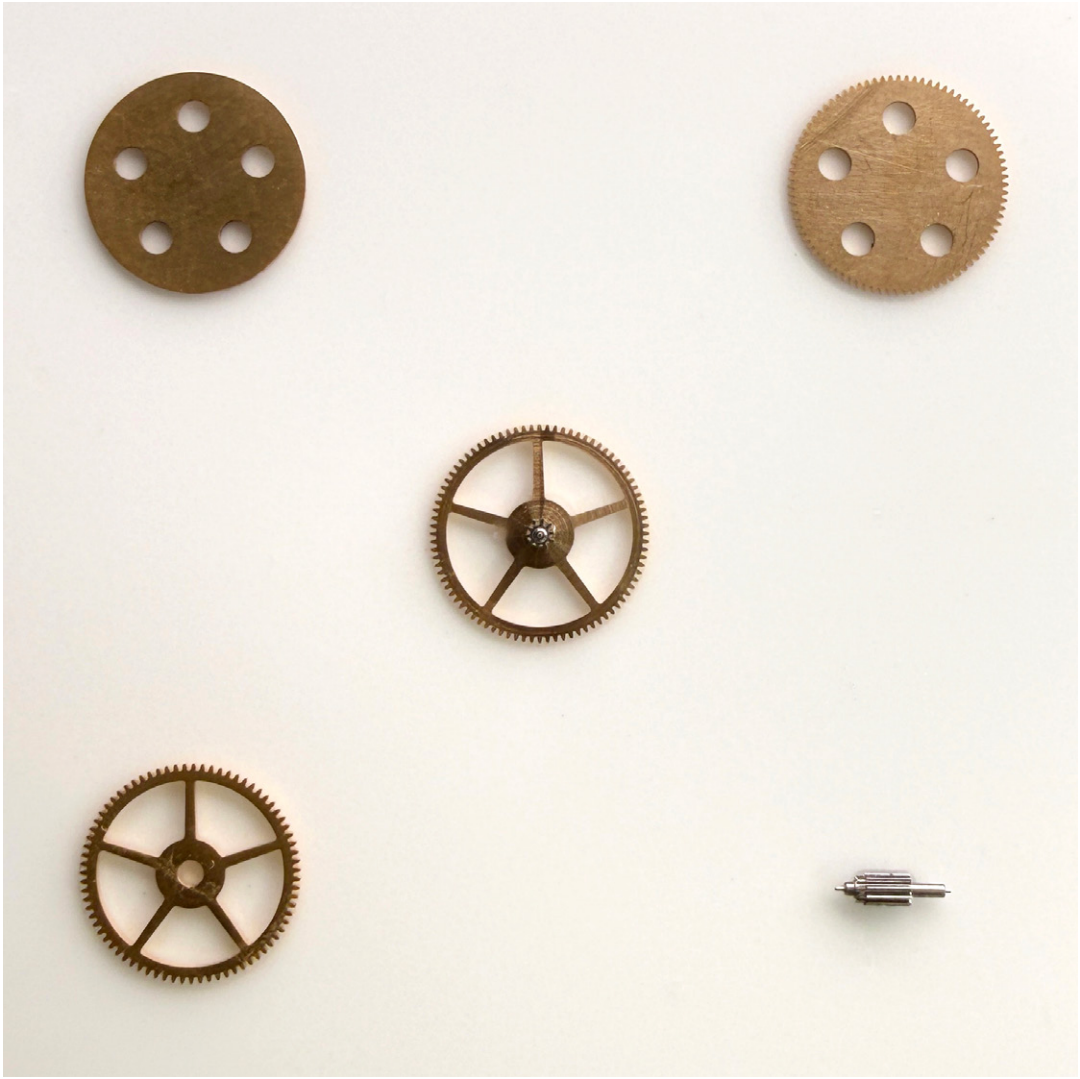
22 Movement top plates at different stages of production

One finished and jewelled, the other mid-manufacture.



23 Stages in the production of a gold centre wheel and pinion

The teeth and crossings are cut from a gold blank, finished, and rivetted to the steel pinion.



24 A balance bridge shown through three stages of finishing

From top to bottom: after filing; after polishing; the finished piece complete with jewelling.





Filing an hour hand to shape



Using a jig to polish the curved form of the Arabic numerals



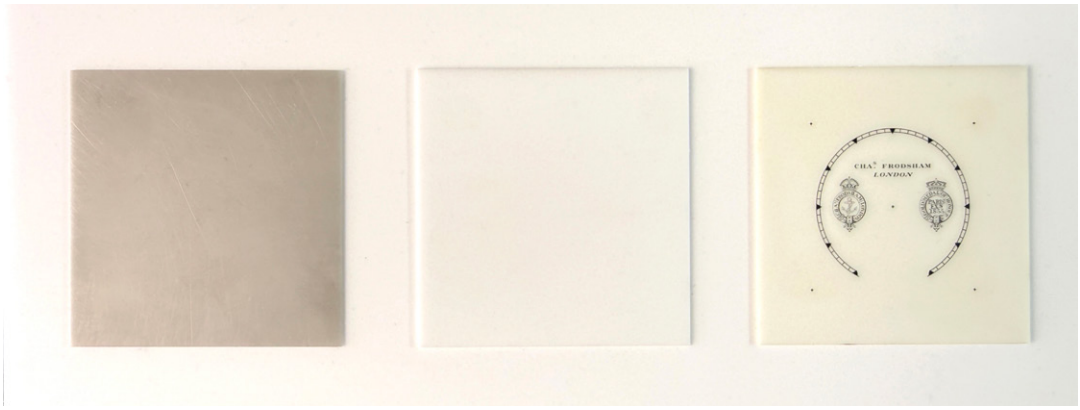
Applying a finished numeral to the dial

DIAL MAKING

The watch dial is made using modern materials and processes. It consists of two pieces of zirconia ceramic, an exceptionally hard material, held together by a steel ring. The dial markings are created using vapour-deposition, which deposits a fine layer of chromium oxide. The hands and numerals are made using more traditional methods: steel is cut, filed and black-polished to a mirror-like finish, then blued by hand. This heat treatment both decorates and protects the components from rust.

25 The initial stages in the production of a ceramic dial

From left to right: the raw material; after a matt finish has been applied; the dial design applied by vapour deposition.



26 The bluing process

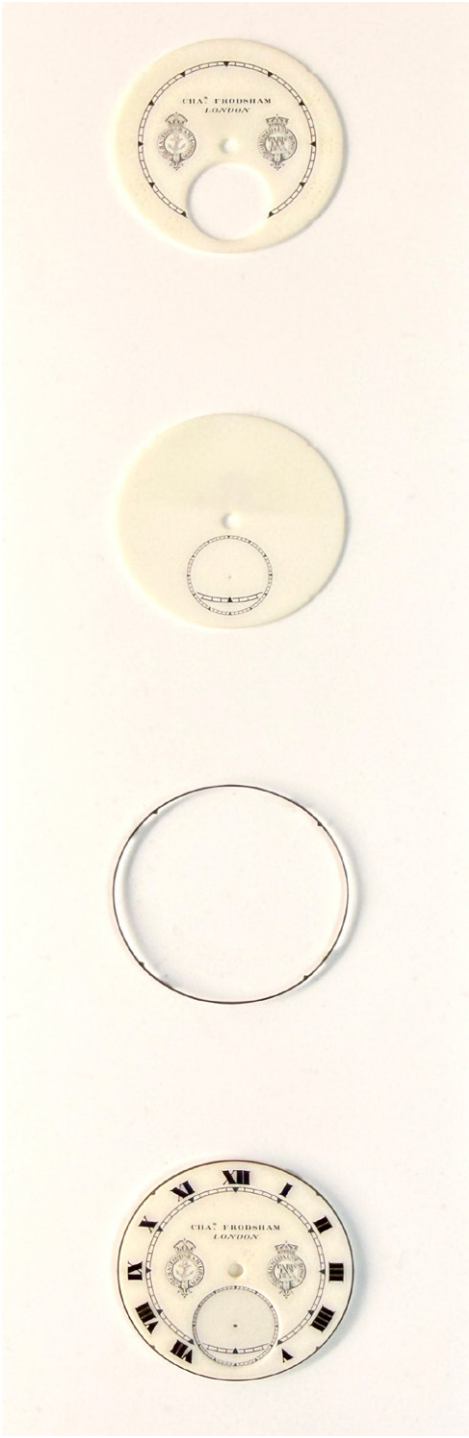
Both the steel hands and numerals undergo the same finishing processes. They are filed, hardened, tempered, polished and then blued by heat treating to achieve their vivid colour.





27 Completing the dial

From top to bottom: the three separate components
of the dial before assembly; a completed dial with applied numerals.





A watchmaker inspecting
a yellow-gold case head



The London assay marks of a 22ct gold case



A watchmaker turning
a case head on a lathe

CASE MAKING

The wristwatch cases are turned and milled from two piece of raw material, and are produced in steel, titanium, and rose, white or yellow gold. Gold cases and buckles are sent to Goldsmiths Hall in London for assay marking. The leather straps are produced off-site by a traditional strap maker. Numerous operations and additional components are required to produce a fully formed, dust- and water-resistant case, ready to be worn.

28 A case head shown through four stages of production

From top to bottom: the raw material; after turning the inside of the case; after turning the outside; the finished case, with lugs formed by milling.



29 A screw-down caseback shown through four stages of production

From top to bottom: the raw material; after turning the inside of the case; after turning the outside; the finished caseback with faceted sides.



30 Various components used to complete the case

A tin gasket; a case spring; silicone gaskets;
crystals; the winding crown assembly



31 Finishing the case

The completed case with leather strap and components used to make the buckle.





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