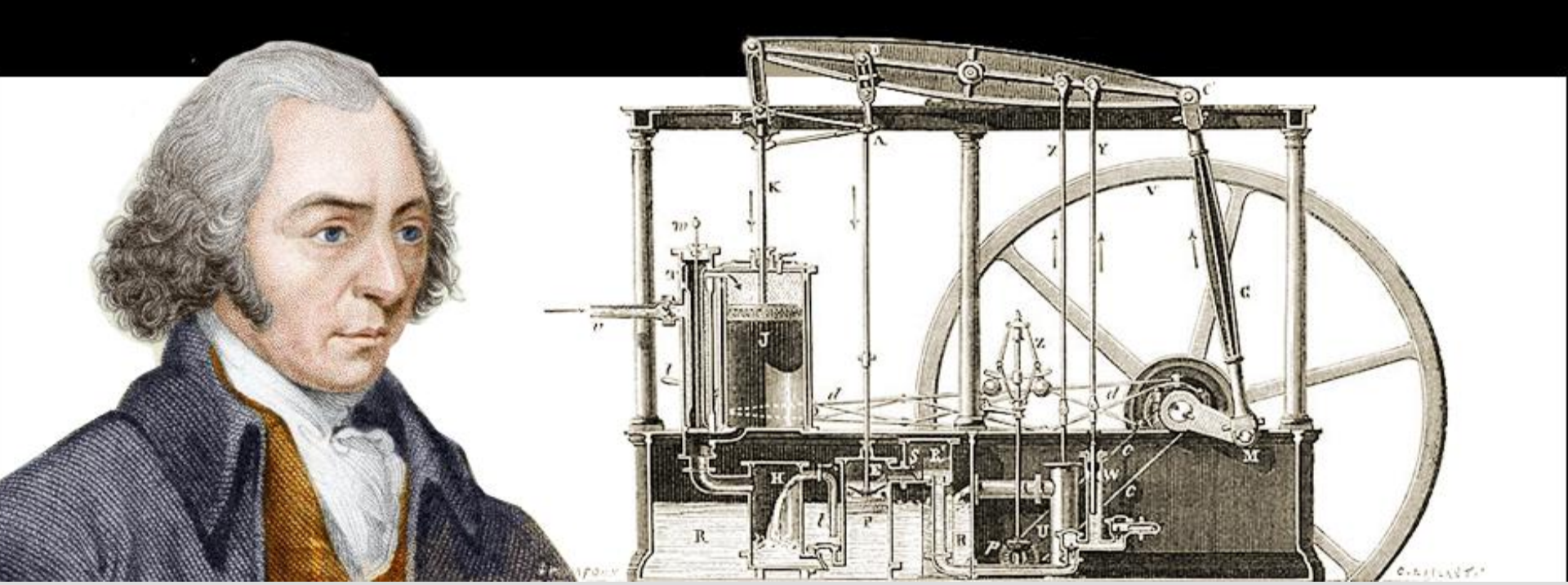


Scottish Engineering

Hall of Fame

James Watt (1736-1819)

The First Inductee

Scottish Engineering

Hall of Fame

James Watt

(1736-1819)

His Life

1736 Born Greenock, Scotland
1755-56 Trains as a scientific instrument maker in London
1756 Returns to Glasgow and establishes a workshop at Glasgow University
1765 Has his eureka moment for transforming the efficiency of Newcomen's steam engine
1774 Moves to Birmingham, forming a partnership with Matthew Boulton at the Soho Manufactory
1784 Fellow of the Royal Society of Edinburgh
1785 Fellow of the Royal Society, London
1806 Doctor of Laws, Glasgow University
1814 Declines a baronetcy
1814 Foreign Member of the Academie des Sciences, Paris
1819 Died and buried at Handsworth near Birmingham

Scottish Engineering

Hall of Fame

James Watt

(1736-1819)

Engineering achievements

James Watt trained as a scientific instrument maker and developed into an outstanding scientist, engineer and inventor.

Watt's practical and enquiring mind led him to repair a malfunctioning teaching model at Glasgow University of an earlier design of a Newcomen steam engine, culminating in his invention in 1765 of the separate condenser to dramatically improve its efficiency.

With subsequent improvements in engine design Watt's engine developed into a form in which it could be applied effectively to power machinery in mines, mills and factories, ending dependence on water power for driving the industrial revolution.

Scottish Engineering

Hall of Fame

James Watt

(1736-1819)

The Patent System Added

The Fuel of Interest

To the Fire of Genius

Inscribed above the North entrance to the Herbert C. Hoover Building, Washington,

US Department of Commerce.

Scottish Engineering

Hall of Fame

James Watt

(1736-1819)

Project Stages

•Identifying an unfulfilled need;

•Recognising reasons for existing conditions not meeting the need (gap analysis);

•Using creativity to postulate means of meeting the need;

•Assessing competing solutions against value criteria.

Scottish Engineering

Hall of Fame

James Watt

(1736-1819)

Engineering achievements

Watt's interest and expertise extended far beyond mechanical engineering and the steam engine however.

While working in Glasgow he developed a great and enduring interest in chemistry which he applied at the Delftfield pottery.

He also practised as a civil engineer planning a number of canals, roads, railways and docks.

He was interested in the development of manufacturing practices in factories, invented a machine for copying letters and drawings, and, in his retirement, a machine for copying sculptures.

Scottish Engineering Hall of Fame

James Watt (1736-1819)

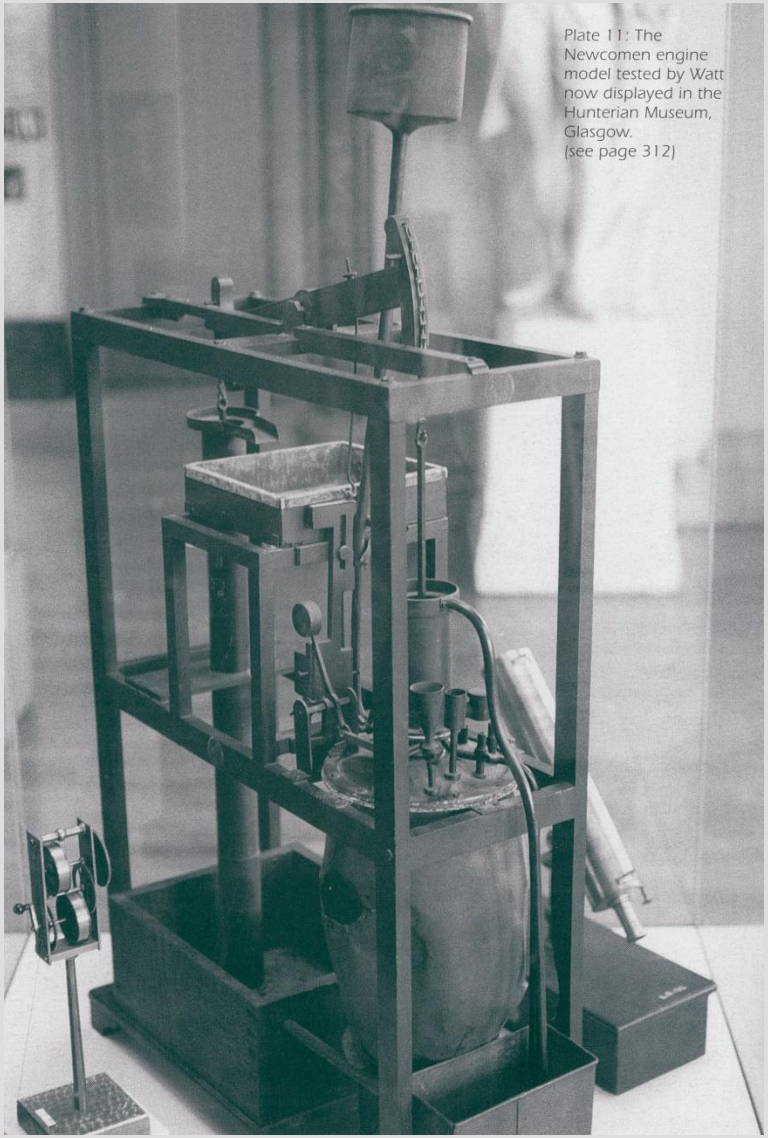


Plate 11: The Newcomen engine model tested by Watt now displayed in the Hunterian Museum, Glasgow.
(see page 312)

Scottish Engineering

Hall of Fame

James Watt

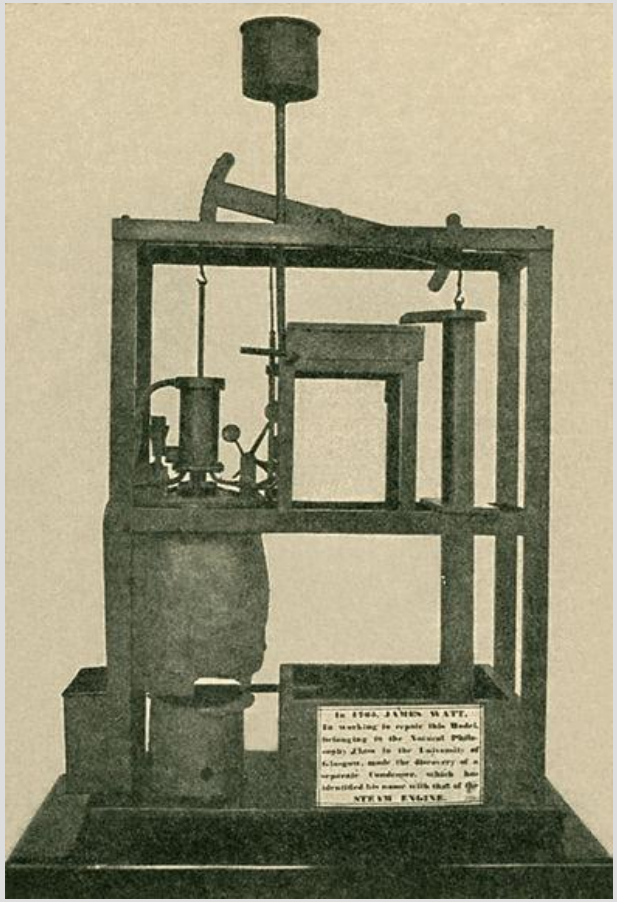
(1736-1819)

Scottish Engineering

Hall of Fame

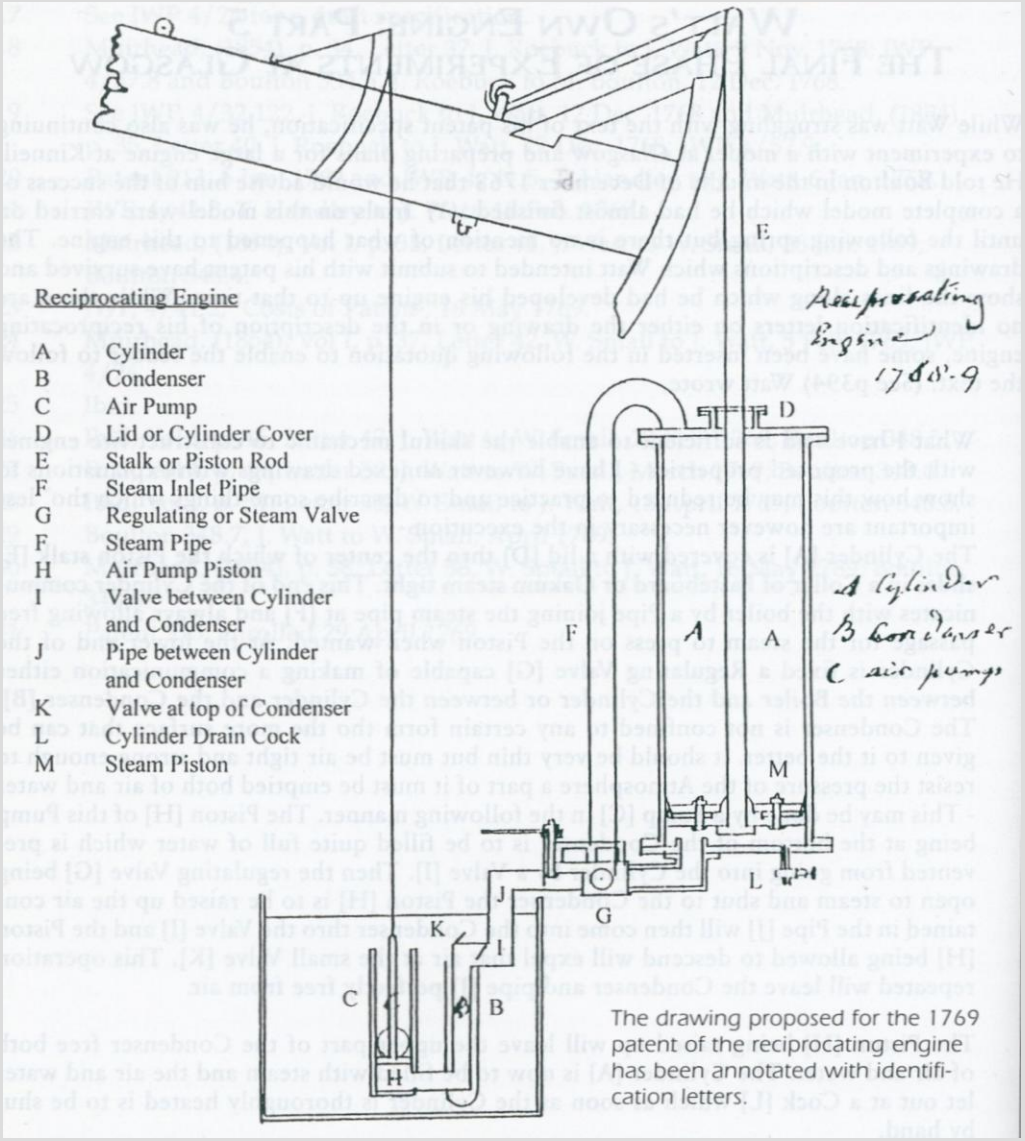
James Watt

(1736-1819)



Scottish Engineering Hall of Fame

James Watt (1736-1819)



The drawing proposed for the 1769 patent of the reciprocating engine has been annotated with identification letters.

Scottish Engineering

Hall of Fame

James Watt

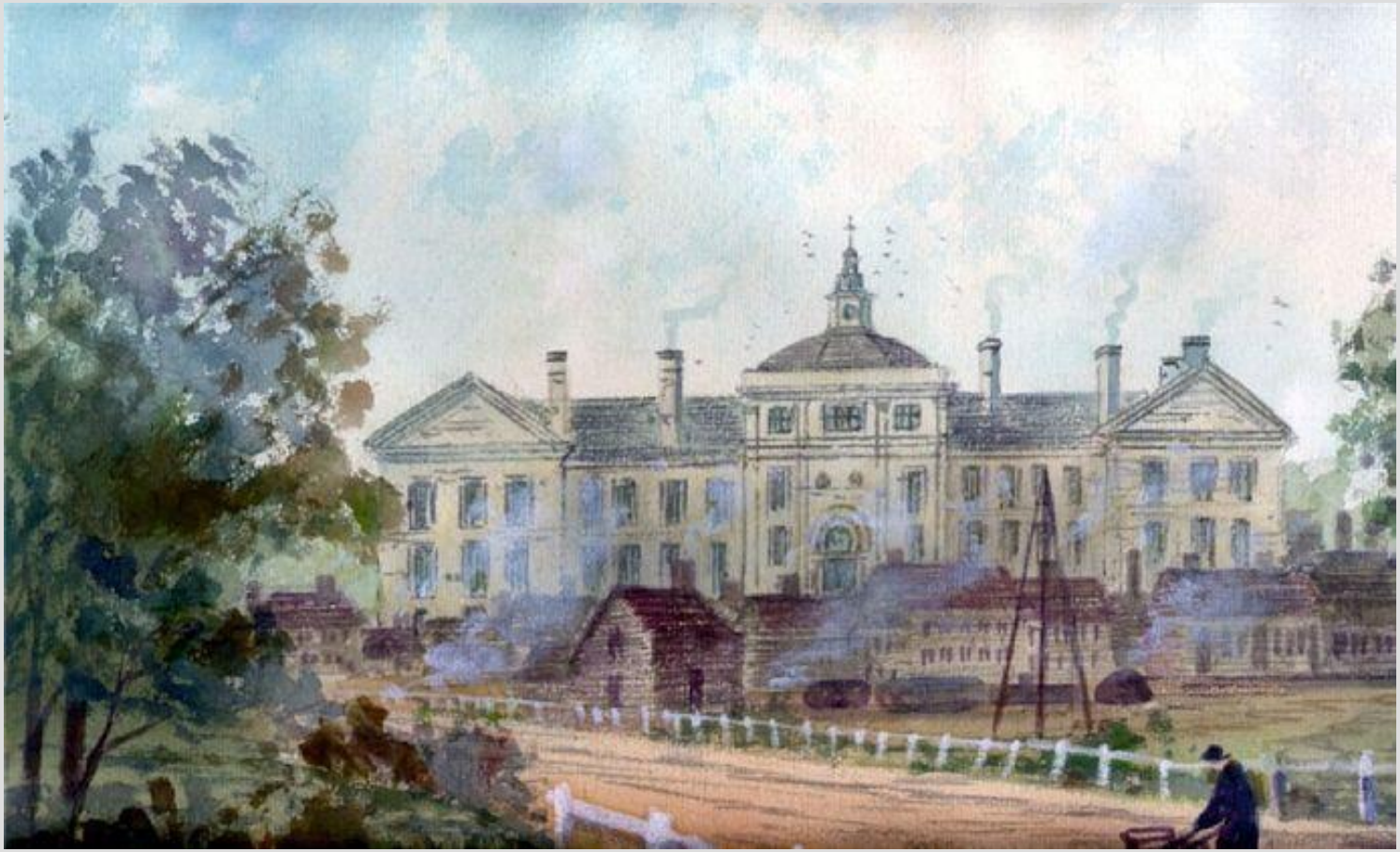
(1736-1819)

Scottish Engineering

Hall of Fame

James Watt

(1736-1819)



Scottish Engineering

Hall of Fame

James Watt

(1736-1819)

Scottish Engineering Hall of Fame

James Watt (1736-1819)

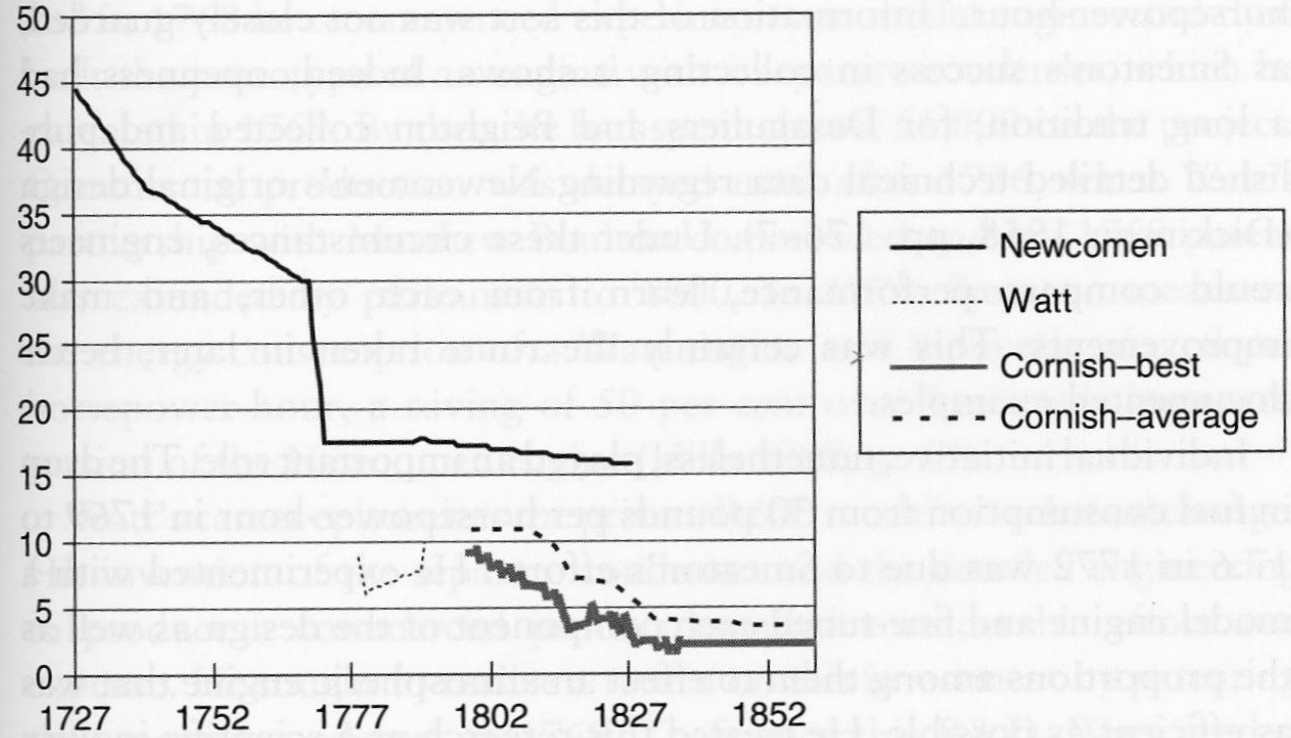


Figure 7.1 Coal consumption in pumping engines: pounds of coal per horsepower-hour

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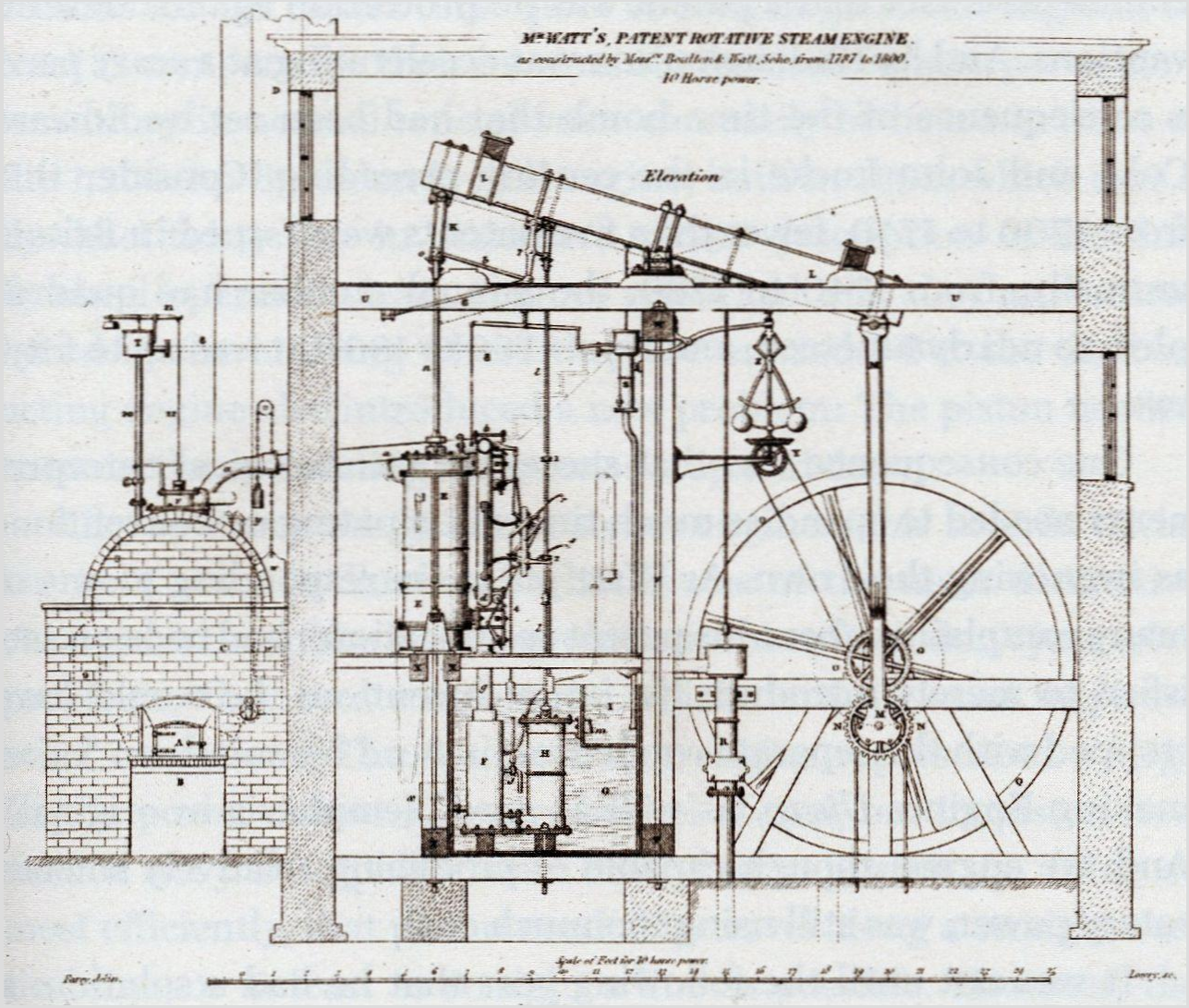
James Watt (1736-1819)

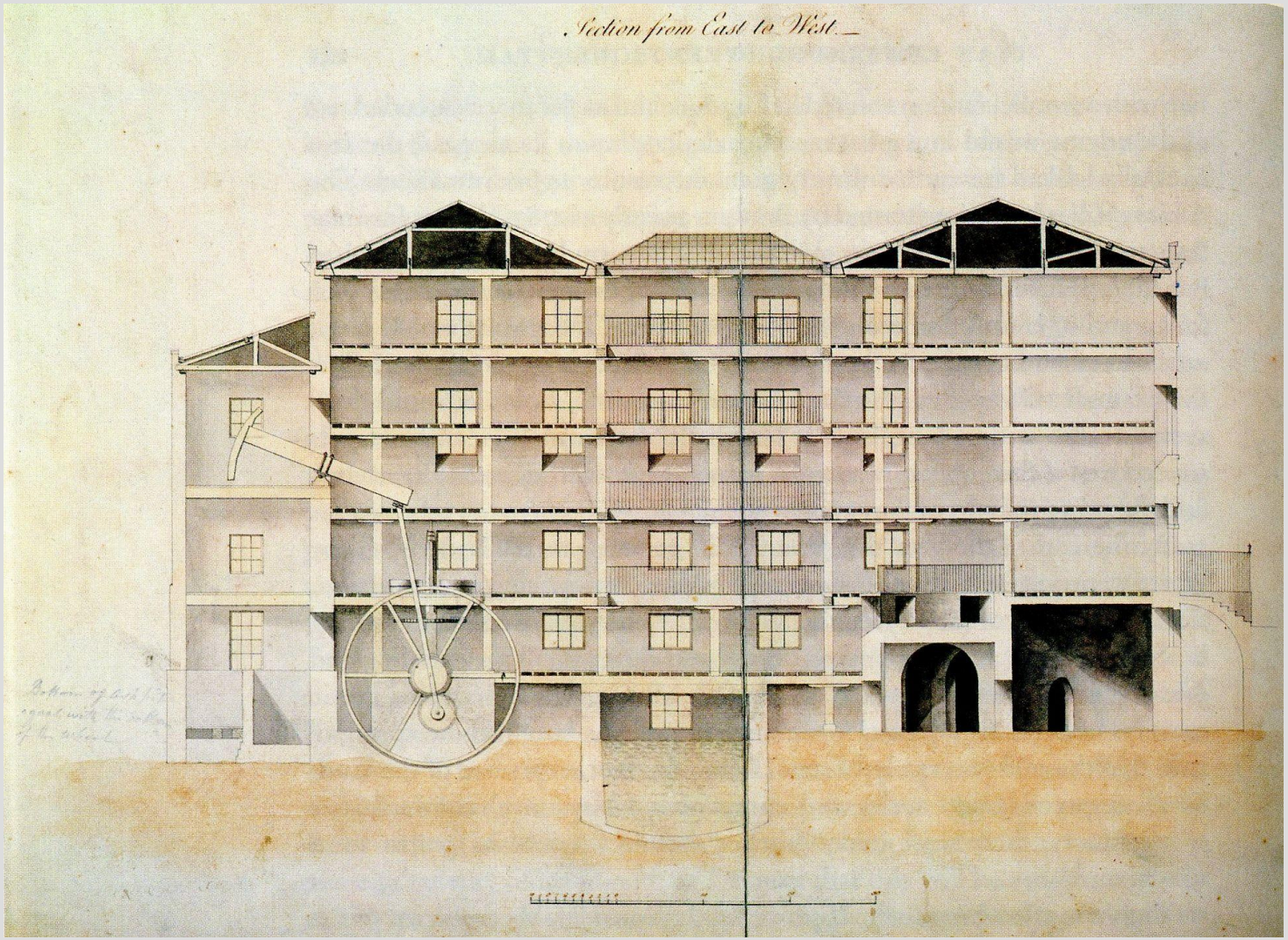


Scottish Engineering

Hall of Fame

James Watt

(1736-1819)



Scottish Engineering

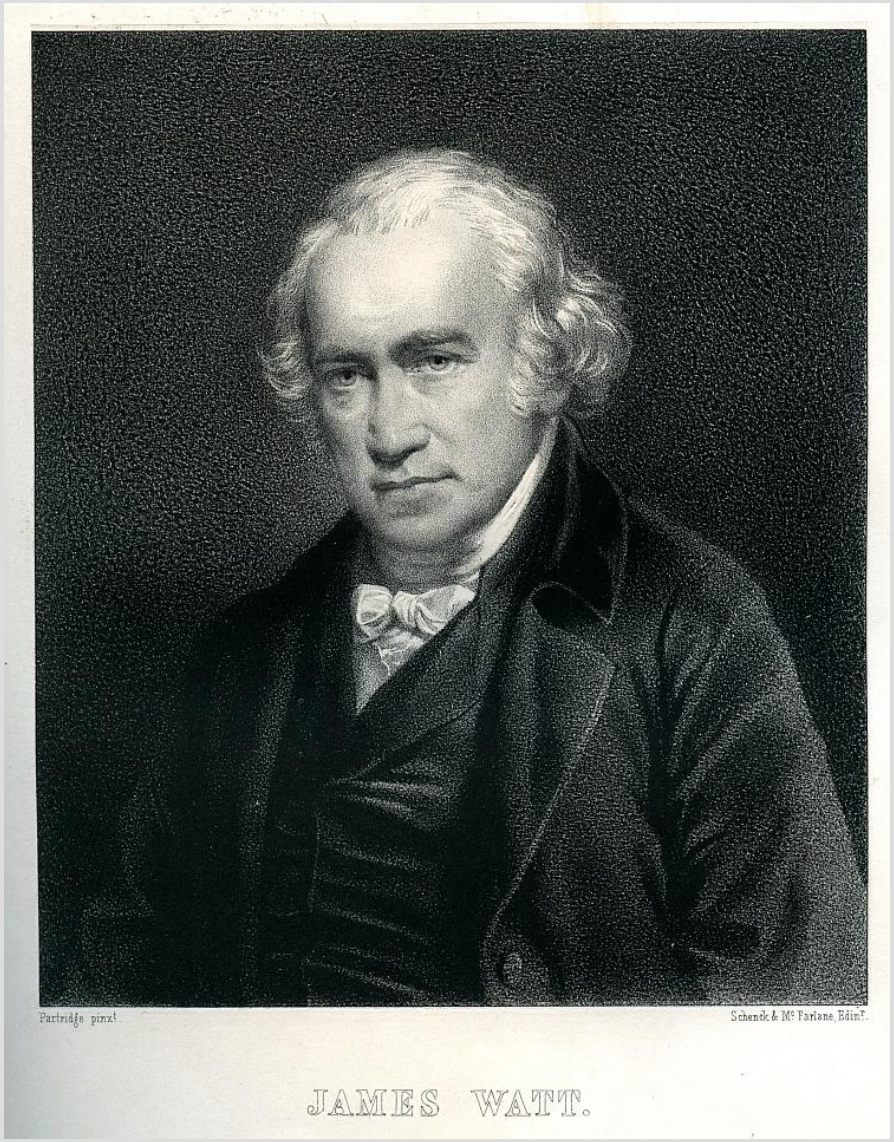
Hall of Fame

James Watt

(1736-1819)

Scottish Engineering Hall of Fame

James Watt (1736-1819)



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James Watt

(1736-1819)

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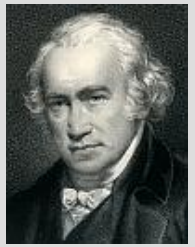
James Watt

(1736-1819)



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James Watt

(1736-1819)

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James Watt

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James Watt (1736-1819)

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James Watt

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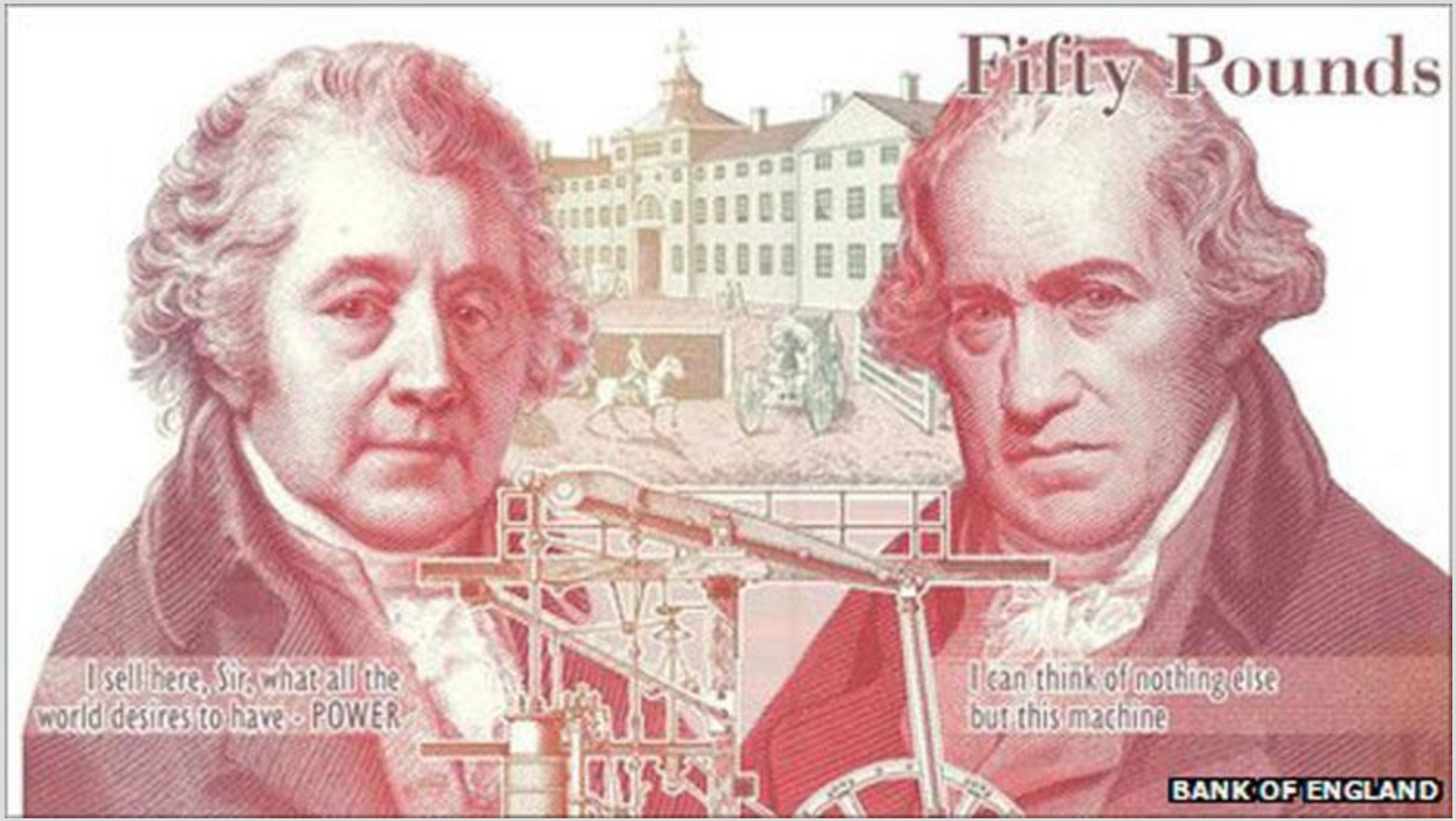
James Watt

(1736-1819)



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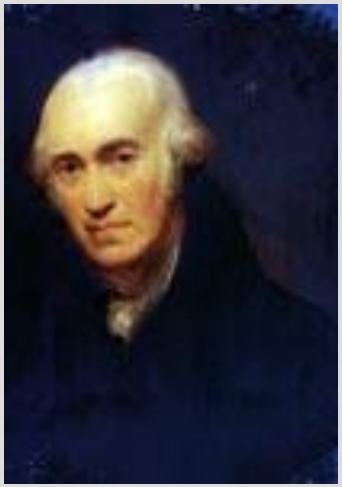
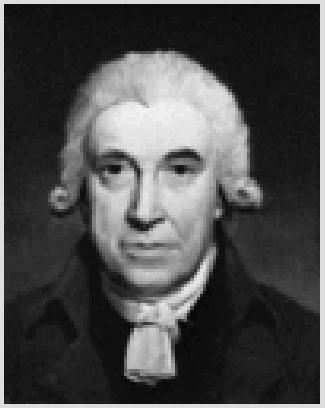
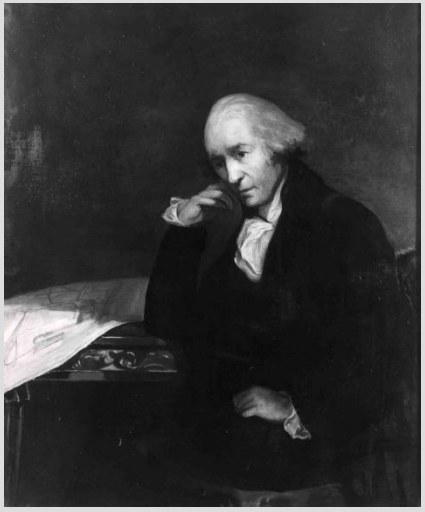
James Watt (1736-1819)







Scottish Engineering

Hall of Fame

James Watt

(1736-1819)

His Legacy

Watt's steam engine provided a huge impetus to the industrial revolution which occurred in the later eighteenth and early nineteenth centuries, as recognised by his business partner Matthew Boulton who stated in 1776:

'I sell here, Sir, what all the world desires to have - Power'.

Watt provided the breakthrough technology that made steam engines the power source of the world. His financial and technical success inspired other inventors.

In the course of developing his steam engine Watt developed a profound understanding of what today is called thermodynamics, and in 1796 developed the indicator to aid understanding of the behaviour of the steam inside the engine's cylinder.

Aware of the need to help potential purchasers of his new engine comprehend its output Watt adopted the term 'horsepower', a key step in the standardisation of the measurement of power.

Watt's name and significance is recognised by the International System of Units (SI) which titles its unit of power the 'watt'.

Scottish Engineering Hall of Fame

James Watt (1736-1819)

More Information

Lives of the Engineers Samuel Smiles, various editions, 1861-1905
Records, publications, photographs and artefacts relating to James Watt: Heriot-Watt University Archives GB 582 HWUA JW
The model of the Newcomen engine that inspired Watt's improvements is in The Hunterian at the University of Glasgow
James Watt's workshop is recreated in the Science Museum, London
Old Bess, a 1777 beam engine by Boulton and Watt is in the Science Museum, London
There is a 1786 *Boulton and Watt engine* in the National Museum of Scotland, Edinburgh.
There is a *1788 Rotative engine* in the Science Museum, London.
Soho House in Birmingham celebrates the life of Matthew Boulton, and James Watt and the Lunar Society
Near Nelson's Column in Glasgow Green is the *James Watt boulder*.
The McLean Museum and Art Gallery in Greenock has displays on the life of James Watt
Statue of Watt by Chantrey in National Museum of Scotland
Statues of Watt erected in Westminster Abbey, Birmingham, Leeds, Glasgow, Greenock, Edinburgh, Oxford,

Scottish Engineering

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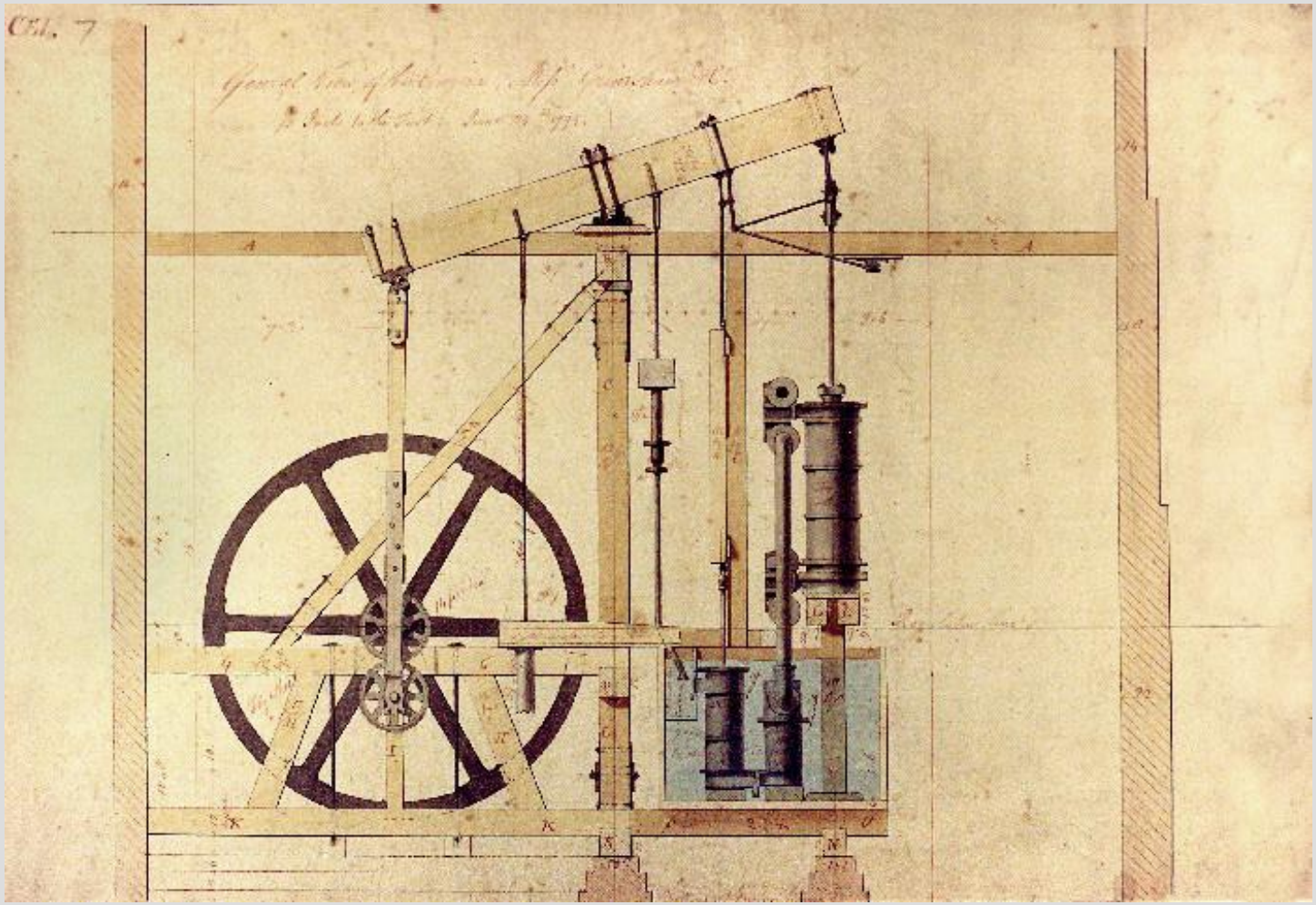
James Watt

(1736-1819)

Scottish Engineering Hall of Fame

James Watt (1736-1819)



1769 (sic): James Watt patents his steam engine with separate condenser. http://heritage.imeche.org

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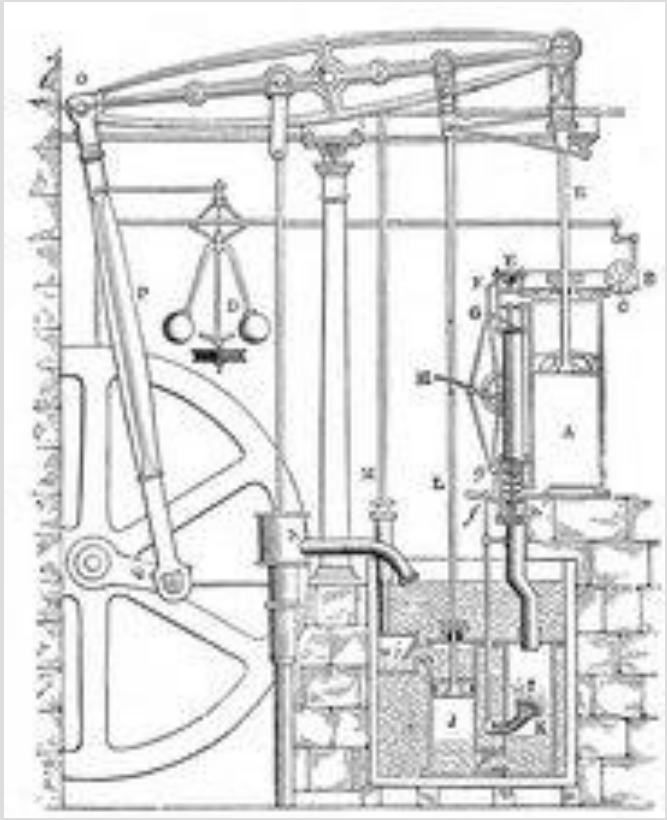
James Watt (1736-1819)



1769 (sic) James Watt patents steam engine - http://trailblazing.royalsociety.org/

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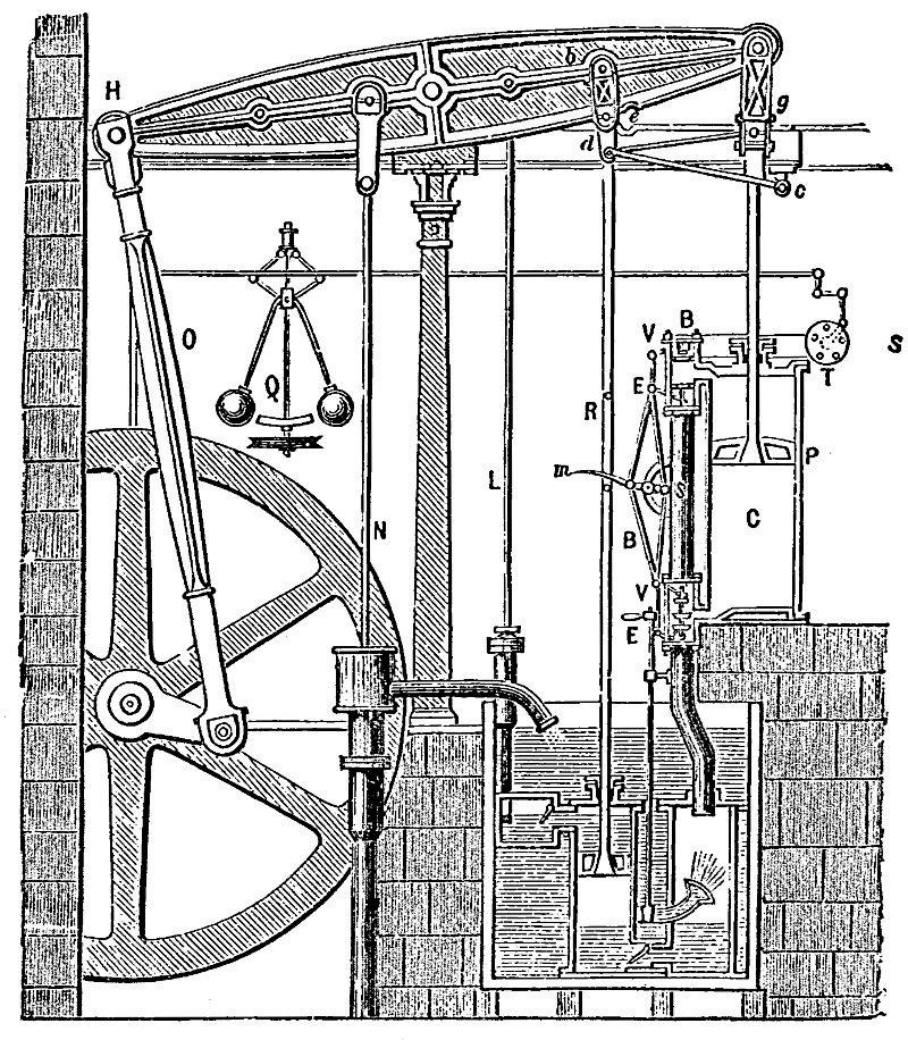
James Watt (1736-1819)



File:SteamEngine Boulton&Watt 1784.jpg http://en.wikipedia.org/wiki

Scottish Engineering

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James Watt

(1736-1819)

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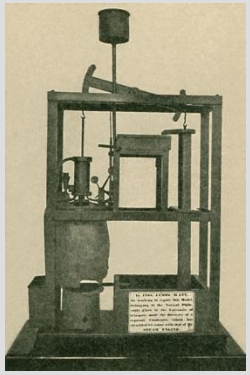
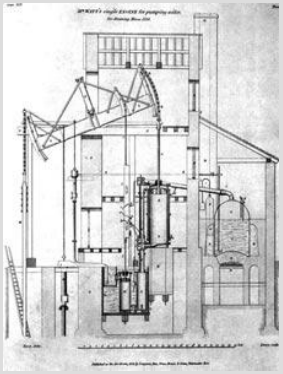
James Watt (1736-1819)

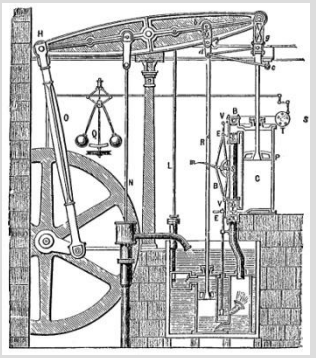
1712



1769



1784



1908

1966

1981

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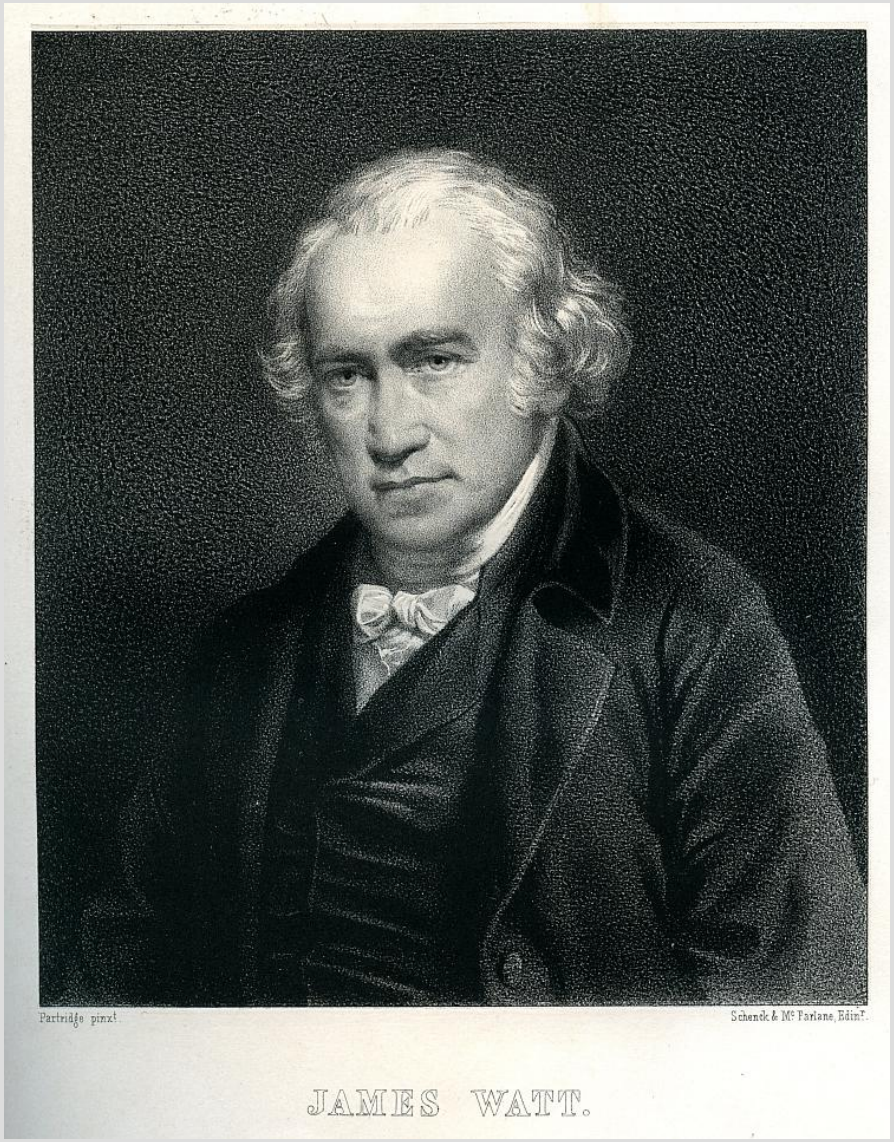
James Watt (1736-1819)



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James Watt

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