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Joseph Brahmah – Engineer, inventor and prolific patentee



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ABSTRACT

One of the results of the First Industrial Revolution in GB (approx. 1750–1850) was the development of the modern patent system which was increasingly used effectively by entrepreneurs. Joseph Brahmah (1749–1814) was one of the most prolific pioneers in this field and his numerous engineering achievements are discussed in the light of his patents.

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1. Introduction

Joseph Brahmah was born in a farming family near Barnsley Yorkshire and christened as Joseph Brahmah, probably a corruption of Brammer or Bramhill. He started spelling his name Brahmah around 1778 as the long “a” was a socially superior pronunciation – there were no Indian connections. His upbringing was in an area when coal, iron and textiles were already becoming dominant but he completed a 7 year apprenticeship as a joiner/cabinet maker then, like many ambitious young men, sought his fortune in London and arrived there in 1773 having walked the entire 170 miles.



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2. Water closets

Up to that time sewage disposal had been primitive, toilets usually being an earth closet over a cesspit which was both unhygienic and smelly. These were usually in an outside yard to reduce the smell but extremely cold in winter. Even in the best circles chamber pots were kept in e.g. the dining room for immediate use and the less civilised often emptied the contents out of the nearest window! Although the water closet (WC) had been invented by Sir John Harington in 1596 the first practical WC was developed by Alexander Cumming who got GB patent 1105 of 1775 and sold them widely among the rich for whom they became something of a status symbol. Brahmah, in his work as a self employed journeyman joiner, was clearly involved with installing them and, noticing that their design flaws led them to freeze up in cold weather, came up with his own improved WC design and filed his first patent in 1778. This was a commercial success and he claimed to have sold around 6000 by 1797. This was clearly very lucrative (buying and installing one cost around £11 – a huge sum then) and funded much of his later work.

3. Patents

At that time getting a patent was both expensive and complicated, there was no search/examination or any clear knowledge of the legal requirements for a specification. Up to around 1750 only about 4 a year were filed in GB and few were of commercial importance. However, with increasing industrialisation, their number and commercial importance steadily increased. The most famous was the steam engine patent of

James Watt which, after long legal wrangles, gave him a lucrative monopoly of that key technology and established the importance of patents once and for all [1]. Brahmah was clearly patent aware as, at a time when journeyman like him earned around £50/year, he managed to find approx £120 for his patent and, soon after, started making and selling his improved WCs. Inevitably the patent was infringed and Brahmah sued one Hardcastle in 1789. Apart from criticising the sufficiency of the description his opponents argued that several of his closets had been tried (and thus published) before the patent had been filed but, despite this, his patent was upheld and he apparently never had further trouble with infringers. Thus, a man from his comparatively humble background could successfully use the patent system despite the complexity and expense. It is noted that Watt had 6 patents in all and his business partner Boulton only 2. Brahmah had 18 (see [Annex](#)) which clearly shows his belief in the value of patents.

4. Locks and machine tools

His success with the WC clearly raised him above the ranks of ordinary workmen into London's leading technical circles and in 1783 he was allowed to join the Society of Arts which, despite its name, was mainly concerned with science and engineering. At this time security locks could be easily broken and the Mechanics Committee of the Society was much concerned with the subject when he joined. Robert Barron had filed patent 1200 of 1778 relating to the tumbler lock which was an improvement over the existing warded locks. Brahmah filed his own patent for an improved lock in 1784 and it was a success. However, mass production of his locks involved standardised components having a high degree of precision which forced him to develop his own machine tools for the purpose. To help him in 1789 he recruited Henry Maudsley (then only 18!) who founded his own company in 1797 and became one of GB's leading machine tool innovators. Between them they eventually solved the production problems by developing specialised machine tools (e.g. a saw for cutting lock barrel slots, a quick grip vice and a spring winding machine). They effectively founded the world's first school of machine tool makers with many distinguished alumni e.g. Nasmyth and Whitworth. In 1798 (not having then made much money) he tried to extend his first lock patent, but instead was granted another which effectively extended the life of his original by 14 years. Thus Brahmah had a monopoly of the high class lock trade, which was hardly challenged till Chubb started filing patents in 1818, and Brahmah became a household word synonymous with locks. He was so confident of his lock quality that one was publically exhibited in his London showrooms around 1790 with a notice offering 200 guineas to anyone who could pick it. This prize was not claimed till 1851 when an American locksmith, A C Hobbs, managed it – but it took him 51 h spread over 16 days, rather long for the average burglar! The Brahmah lock company exists to this day.

5. Pumps and fire engines

Like many engineers at that time Brahmah was given to pursuing a variety of disparate schemes simultaneously and filed

patents for steam driven pumps in 1785/1790 and in 1793 for one used in a fire engine. In 1796 when Watt sued Hornblower and Maberly for infringement of his famous 1769 patent Brahmah (as an engines expert) acted unsuccessfully as a witness against Watt. He also tried his hand as a civil engineer for the waterworks in Norwich over 100 miles from London though this does not appear to have been a happy experience.

6. The hydraulic press

The principles of this had been worked out by the French mathematician/philosopher Blaise Pascal (1623–1662) but Brahmah was the first to develop its practical application. Although best known for locks, this was probably his most important technical achievement for which he filed a patent in 1795 though there is some doubt as to whether Brahmah or Maudsley was the leading innovator. After early teething troubles this became very widely used, initially for applications such as oil extraction from seeds and later for hydraulic cranes etc. As a follow up in 1812 he filed a patent for hydraulic power transmission mains though this idea was not brought into operation for another 30 years.

7. Pens and paper

In 1805 he patented improved paper making techniques but this was not developed. However, in 1806 the Bank of England asked Brahmah to produce a machine for numbering banknotes consecutively. In 1808 they ordered 30 improved machines from him (at £240 guineas each!) and 8 more in 1814. These were still in use in 1878 so this was presumably profitable for Brahmah. Bryan Donkin filed patent 3118 of 1808 for making steel pen nibs. In 1809 Brahmah filed his own patent for cutting a quill into 8 pieces to form pen nibs (which also envisaged the fountain pen) and produced a machine for this purpose. Brahmah bought Donkin's patent for £350 so presumably the pen business had commercial value.

8. Dispensing beer

London was a major centre for the brewing industry and he was the first to employ steam power in brewing in 1785. In retail premises beer was normally kept in cool cellars away from the warm taprooms where the customers drank. Brahmah's interest in hydraulics led to his filing the first patent for a beer pump in 1797 which was the start of another successful industry. Soda water was apparently invented in Dublin and William Francis Hamilton filed 2 patents (3232 of 1809 and 3819 of 1814) but Brahmah produced an improved machine using his hydraulic pump which formed the basis of another long standing business.

9. Coaches

Before the introduction of railways the horse drawn stagecoach was the usual method of long distance travel and, by the early 1800's, the speed of these had greatly increased on the rapidly improving roads. However, this produced an increasing number of accidents; Brahmah himself had been involved in a serious carriage

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