

James Rumsey:

Steamboat Inventor or Pioneer in Steam Navigation?

James Rumsey will forever be considered as the inventor of the steamboat by the people of Shepherdstown. George Beltzhoover, Jr., a member of the second Rumseyan Society, published “James Rumsey--Inventor of the Steamboat”¹ to secure Rumsey’s own claim as inventor. Rumsey’s steamboat was certainly the best-built and most-advanced of all the steamboats in that era, and Rumsey’s mechanical genius is unquestioned. Miss Ella Mae Turner, Rumsey’s biographer, began her book on a mission to prove that Rumsey was the steamboat’s inventor, but in the end, she retreated slightly and titled her work “James Rumsey: Pioneer in Steam Navigation.”²

The title, *Pioneer in Steam Navigation*, may actually be more flattering to James Rumsey than that of *Inventor of the Steamboat*. We laud our pioneers, those few who find their way to the prize without benefit of maps. Inventors are praised, but not so warmly as are our pioneers. Upon completing her study, Miss Turner was canny indeed to use the words “steam navigation.”³ Rumsey’s work did influence the whole of steam power, including the future development of the turbine engine, not just one watercraft.

Christopher Columbus is credited with discovering the New World. However, Leif Ericson sailed to Newfoundland in 1000, and his expedition lived there for over one year. Columbus still gets the credit because European colonization began in earnest after his voyage.

In much the same manner, Robert Fulton gets credit for inventing the steamboat. Fulton’s boat, the *Clermont*, launched steam-powered passenger service on the Hudson River in 1807, and that is the event that has drawn history’s focus.

Dr. Edwin Layton wrote that “Rumsey became a pioneer in attempting to found his inventions on science rather than craft knowledge”⁴, and further, “It was the task of inventors such as Rumsey to find a way to overcome the limitations of traditional technology and to find a way to meet national needs in transportation, power, and other fields vital to America's development.”⁵

¹ George M. Beltzhoover, Jr., James Rumsey—Inventor of the Steamboat (WV Historical and Antiquarian Society, 1900).

² Ella May Turner, James Rumsey: Pioneer in Steam Navigation (Scotdale, PA: Mennonite Publishing House, 1930).

³ A. D. Kenamond, Secretary-Treasurer of the Rumseyan Society, James Rumsey and His Steamboat, Historical sketch delivered before the History Section of the WV Education Association at Clarksburg, WV, November 5, 1937. “Miss Turner had no intention of denying full credit, nor did she consciously hit upon a title that had been used at least twenty years earlier. I find that the late Senator William Campbell, of the Rumseyan Society, in 1910 gave Rumsey the title of ‘the Pioneer of Steam Navigation’ and had it printed in quotation marks.”

⁴ Edwin T. Layton, Jr., James Rumsey: Pioneer Technologist, West Virginia History, Vol. XLVIII (State of West Virginia, Department of Culture and History, 1989) 8.

⁵ *Ibid.*

James Rumsey claimed that he invented the steamboat, and that he was the first to sail a steam-powered boat on December 3, 1787. To announce his achievements, he quickly commissioned the printing of his pamphlet, “A PLAN wherein the power of STEAM is fully shewn”⁶, which he distributed throughout the region. The importance of claiming this feat had little to do with a science or engineering honor. Whoever could win the sole patent for the steamboat could then establish steamship routes and be guaranteed of non-competitive rights to haul freight or passengers.

At the time of Rumsey’s voyage, the Articles of Confederation gave each of the thirteen states the power to grant patents. The patent process was greatly influenced by parochial politics, and as such, states granted patents to native sons or favorites whenever possible. For example, in 1784, Rumsey garnered boat patents from his birth state of Maryland and his adopted state of Virginia. John Fitch, Rumsey’s principal competitor, later convinced Pennsylvania (where he built his steamboat) to grant him a patent as steamboat inventor.

There are complications with Rumsey’s 1784 patents. He patented a boat propelled by poles (the Mechanical Boat), not by water jet propulsion which he incorporated in his successful 1787 steamboat (the “Flying Boat”).⁷ Rumsey designed the Mechanical Boat as a way to navigate the Potomac River’s shallows without using a canal and lock system. General George Washington envisioned the Potomac as a gateway to the west, and he saw Rumsey’s boat as a cheap alternative to building a canal system.⁸

Once built, however, the Mechanical Boat was a practical failure when it came to navigation. The boat would lurch to port or starboard when the poles dug into the uneven riverbed.⁹ Rumsey also was unable to demonstrate the Mechanical Boat on the Ohio River, a feat that would have won him a considerable land grant.¹⁰ The Mechanical Boat, as demonstrated for General Washington, was a “streamboat, and not a steamboat.”¹¹ Rumsey’s 1784 patents do nothing, then, to advance his claim as inventor of the steamboat.

In early 1788, Rumsey received patents for his Flying Boat from New York and New Jersey. But John Fitch followed that by writing his own pamphlet¹² which rejected Rumsey’s claim. Fitch won patents in Pennsylvania and Delaware for his steam-powered, oar-propelled boat that he claimed he sailed on the Delaware River in August 1787, some three months prior to Rumsey’s launch at Shepherdstown.

⁶ James Rumsey, A PLAN wherein the power of STEAM is fully shewn, By a new constructed Machine, for propelling Boats or Vessels, of any burthen, against the most rapid streams or rivers, with great velocity, pamphlet (Berkeley Co., VA: January 1788). Re-titled: A Short Treatise on the Application of Steam, pamphlet (Philadelphia, PA: Joseph James, Printer, May 1788)

⁷ Turner, 81.

⁸ Turner, 13.

⁹ Turner, 74-75.

¹⁰ Andrea Sutcliffe, STEAM: The Untold Story of America’s First Great Invention (New York: Palgrave Macmillan, 2004)

7. Congress offered a land grant of 30,000 acres if the boat could travel fifty miles per day for six days.

¹¹ Turner, 14.

¹² John Fitch, The Original Steam-Boat Supported (Philadelphia: Joseph James, printer, May 10, 1788)

Just when he needed to mount a serious rebuttal to Fitch, James Rumsey left for England in May 1788. He had persuaded influential members of the American Philosophical Society in Philadelphia to back his inventions. Some eighteen members of the Society, including Benjamin Franklin, formed the original Rumseian Society on May 9th to finance Rumsey in securing patents in England and Europe.¹³

Rumsey did succeed in England, receiving four Royal patents for various mechanical inventions. But the patent for inventing the steamboat eluded him. Rumsey's English version of the Flying Boat, the *Columbian Maid*, did not sail until February 1793, about two months after his death from a stroke.

The US Constitution, adopted in July 1788, transferred patent authority to the federal government. The Patent Act of 1790 codified this authority by appointing three commissioners—the Secretary of State, the Secretary of War and the Attorney General—to approve patents. Administration of the Patent Office was handled by the Department of State.¹⁴

For two years, the patent process was in limbo. States did nothing as their role in the patent process had become meaningless. And the federal government could do nothing until Congress gave it legal authority.

Rumsey, in London, could do nothing but fret and stew. On June 6th, 1789, Rumsey wrote Thomas Jefferson in Paris (then Ambassador to France but soon to become our first Secretary of State) that the new patent laws needed to include patents for principles, not just a specific invention. Rumsey had been haggling with New York over his boiler patent. New York would only allow Rumsey a patent for the boiler he submitted in a drawing; the state refused to patent Rumsey's revolutionary new boiler design. Rumsey beseeched Ambassador Jefferson: “[...] Cause them to Strip the world in art & Seeing and knowing you Could throw great light on this Subject upon your return to America [...]”¹⁵

When the US Patent Office opened in 1790, Jefferson was conflicted by the steamboat patent applications he received. Quite ironically, Jefferson was not a believer in monopolies of which patents are an operating instrument. Jefferson never saw fit to patent any of his own inventions which ranged from a moldboard plow to a cipher wheel to encode secret messages.¹⁶

Jefferson was also frustrated by the patent process that Congress passed—it was taking forever to examine an application. And third, the patent process gave weight to the “first and true inventor”¹⁷ rather than who first delivered a working invention.

This last consideration was almost laughable. All of the steamboat inventors had been extremely secretive to prevent industrial espionage. Indeed, an incognito John Fitch was discovered snooping around Shepherdstown in April 1789.¹⁸ But when the Patent Office opened, the inventors had to put

¹³ Turner, 118.

¹⁴ Sutcliffe, 107.

¹⁵ Turner, 166-167.

¹⁶ Sutcliffe, 104.

¹⁷ Sutcliffe, 114.

¹⁸ Turner, 126.

their cards on the table; then the men all boasted about when they first got the idea of steam-powered boats, each trying to prove by solicited affidavits that he had the idea first.

Secretary of State Jefferson was left to decide who invented the steamboat amongst the competing claims of James Rumsey, John Fitch, John Stevens and Nathan Read. Jefferson threw up his hands, and he awarded all four men a non-exclusive patent (signed on August 26, 1791).¹⁹ Thus, none of the inventors gained an advantage.

The US Patent Office burned in 1836 with only the index books surviving. Historians never had the opportunity to examine the documents presented to Secretary Jefferson. Had these documents survived, we would see the full picture of American steamboat development in late Eighteenth Century. James Rumsey's claim would have received more attention by historians had the patent applications survived.

Although Rumsey's technology (boiler, piston-pump and water jet drive) was as much as fifty years ahead of its time, he was held to comparison with John Fitch's boat which was propelled by banks of oars powered by a steam engine.

- Rumsey's boiler made operating steam by heating a mere twenty pints of water. Fitch had to heat 500 gallons to make steam.²⁰
- Rumsey's single-shaft piston-pump would not be patented in America until 1840.²¹
- Prior to the Flying Boat, a water-jet propelled boat was just a theory.²² The Flying Boat sailed at three miles per hour, the same speed that the steam-powered, paddleboat *Clermont* made on her maiden voyage twenty years later.

Thomas Jefferson wrote that James Rumsey was the "most original and the greatest mechanical genius I have ever seen."²³ Had Jefferson not been hamstrung by the patent law, he might very well have crowned James Rumsey the "inventor of the steamboat."

¹⁹ Sutcliffe. 114-115.

²⁰ James Rumsey, *A Short Treatise on the Application of Steam*, pamphlet (Philadelphia, PA: Joseph James, Printer, May 1788). Affidavit No.12

²¹ Brooke Hindle, *James Rumsey and the Rise of Steamboating in the United States*, West Virginia History, Vol. XLVIII (State of West Virginia, Department of Culture and History, 1989). 38. "This was an invention he [Rumsey] never sought to patent, but years later, in 1840, Henry R. Worthington obtained an influential patent for a direct-coupled pump."

²² Edwin T. Layton, Jr., *The Most Original*, (*Invention and Technology Magazine*, Vol. 2, Issue 3, Spring 1987) 50-56. "In December 1785, after his return from France, [Benjamin] Franklin gave a paper before the American Philosophical Society in which he reported the conclusions of Daniel Bernoulli, [...] that a boat might be advantageously driven by the force of reaction of a jet of water shot backward from it. Franklin added his own suggestion that the jet of water might be produced by a steam engine. Rumsey evidently heard about Franklin's proposal, and he designed a steamboat based on this plan."

²³ Thomas Jefferson, *The Papers of Thomas Jefferson*, 14:699: "Jefferson to Joseph Willard" (March 29, 1789)

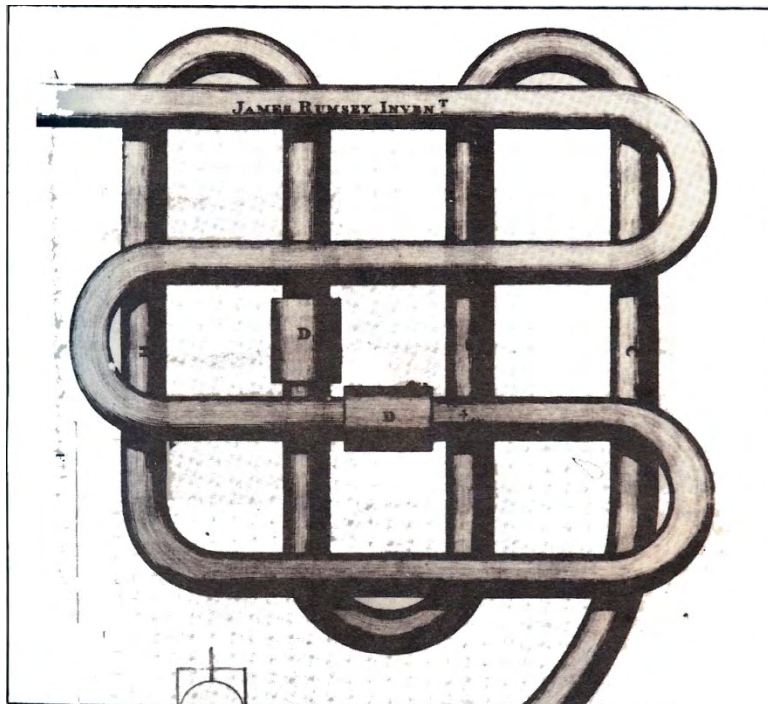
James Rumsey's Boiler

The May 1788 issue of *The Columbian Magazine* featured James Rumsey's drawing and detailed description of his pipe boiler which he invented in 1785.

The conventional boiler of this period consisted of a large, closed tank of water heated by a single fire tube. James Rumsey reversed this concept, using the large tank as a fire chamber and circulating the water inside a 2" diameter tube. Rumsey's design greatly increased the surface area to heat the water. Using elbow bends, Rumsey was able to fit 200' of tubing in the fire chamber.

Whereas a conventional boiler heated 500 gallons of water to make steam, Rumsey's boiler heated approximately two and one-half gallons to make the same steam output. Rumsey's efficient coiled tubing design would be the model for future steam boilers.

As there was no pipe available, the boiler tubing was forged by area blacksmiths Michael Entler and Jonathan Osborn from iron supplied by nearby Antietam Forge. Blacksmiths Philip Entler and Jacob Haynes also helped build Rumsey's boiler and steam engine.



Source: Ella May Turner, James Rumsey: Pioneer in Steam Navigation (Scotdale, PA: Mennonite Publishing House, 1930) 71-72.

About the author David G. Allen

David Allen resides in Clarksburg, WV. His interest in blacksmithing has led him to write several articles about the early iron industry in West Virginia including “Jefferson County Ironworks”, *Magazine of the Jefferson County Historical Society*, Vol. LXX, December 2004. pp. 94-103.

Mr. Allen is editor of the Appalachian Blacksmiths Association Newsletter and also served as president of the group. He is an economist and a writes a monthly column for the *West Virginia State Journal* newspaper.