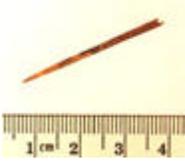


History of the Sewing Machine



People started sewing as long as 20,000 years ago, during the last Ice Age. Archaeologists have discovered bone needles with eyes, used to sew together skins and furs, dating back to this time. The earliest known sewing needles made of iron come from the Celtic hill fort at Manching, Germany, and date to the third century BC. The tomb of a minor official of the Han Dynasty (202 BC-AD 220) has been reported by Chinese archaeologists as containing a sewing set complete with thimble. This would be the oldest known example of a thimble, which originated as a device to help push crude needles through resistant materials such as animal skins.

It was over 1500 years later in 1790, that the first workable sewing machine was invented and patented by the British inventor Thomas Saint. Earlier, in 1755, Karl Weisenthal, a German inventor, devised the first sewing machine needle, but did not produce a complete machine. Saint's machine, which was designed to sew leather and canvas, mainly on boots, used only a single thread and formed a chain stitch. Instead of a needle, an awl was employed to pierce a hole through the material being sewed. Another mechanism placed the thread over the hole, and then a needlelike rod with a forked point carried the thread through to the underside of the work, where a hook caught the thread and moved it forward for the next stitch. When the cycle was repeated, a second loop was formed on the underside of the cloth with the first loop, thus forming a chain and locking the stitch. Saint's machine, however, never progressed beyond the patent model stage. And it overlooked the Weisenthal needle design.

In 1830 a French tailor, Barthelemy Thimonnier (1793-1857), patented the first practical sewing machine. It employed a hook-tipped needle, much like an embroidery needle, that was moved downward by a cord-connected foot treadle and returned by a spring. Like Thomas Saint's machine, it produced a chain stitch. By 1841, eighty of his machines were being used to sew uniforms for the French army. However, his factory was destroyed by a mob of tailors, who saw the new machines as a threat to their livelihood. Thimonnier died bankrupt in England.

The earliest idea for a double-thread sewing machine came from Walter Hunt (1796-1860) of New York in 1834. Often called a Yankee mechanical genius, (Hunt also invented the safety pin) Hunt devised a machine that used a reciprocating eye-pointed needle. It worked in combination with a shuttle carrying a second needle, making an interlocked stitch comparable to that of the modern machine. He abandoned the project, however, convinced that his invention would throw impoverished seamstresses out of work.

None of these machines presented any real competition to hand-sewing, though; that was accomplished by Elias Howe (1819-67) of Massachusetts. In 1846 Howe patented a sewing machine with a grooved, eye-pointed needle and shuttle. This lock stitch machine could sew nothing but straight seams, which could not be longer than the basing plate. Unsuccessful in marketing the device in America, Howe went to England to adapt his

machine for an English corset-maker. He returned penniless to find that sewing machines were being sold by many manufacturers, all infringing on some part of his 1846 patent. In 1856, after favorable litigation, Howe entered into the world's first patent pool.

In 1851, Issac M. Singer (1811-75) patented the first rigid-arm sewing machine. Before this, all machines employed an overhanging arm that held the needle directly and vibrated with it. Singer's machine also included a table to support the cloth horizontally, instead of a feed bar; a vertical presser foot to hold the cloth down against the upward stroke of the needle, and an arm to hold the presser foot and the vertical needle-holding bar in position over the table. A real breakthrough was his invention of a foot treadle instead of a hand crank. Parts of Singer's new machine were based on Howe's work. In fact, Singer was sued by Howe for infringement of the latter's patent rights, but a compromise was reached where Singer paid a royalty.

In spite of this, Singer went on to found a company that became the world's largest manufacturer of sewing machines by 1860. He was awarded 20 additional patents, spent millions of dollars advertising his machine, and initiated a system of providing service with sales. By the 1850s, Singer sewing machines were being sold in opulent showrooms; although the \$75 price was high for its time, Singer introduced the installment plan to America and sold thousands of his machines in this way.

Other important inventions in the field included the rotary bobbin that was incorporated (1850) into a machine patented by the American inventor Allen Benjamin Wilson (1824-88) and the intermittent four-motion feed for advancing the material between stitches, which was part of the same patent.

The Early Contributors

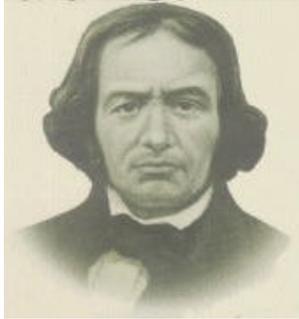
Thomas Saint

Not much is known about the life of Thomas Saint, the London cabinet maker who is usually credited with patenting the first sewing machine in 1790. The patent was ponderously entitled, "An Entire New Method of Making and Completing Shoes, Boots, Splatterdashes, Clogs, and Other Articles, by Means of Tools and Machines also Invented by Me for that Purpose, and of Certain Compositions of the Nature of Japan or Varnish, which will be very advantageous in many useful Appliances." It was overlooked for 83 years because it was classed under wearing apparel. Along with accounts of several processes for making various varnish compositions, the patent contains descriptions of three separate machines; the second of these was for "stitching, quilting, or sewing."

Though far from practical, the machine incorporated several features common to a modern sewing machine. It had a horizontal cloth plate or table, an overhanging arm carrying a straight needle, and a continuous supply of thread from a spool. The motion was derived from the rotation of a hand crank on a shaft, which activated cams that produced all the actions of the machine. When the patent was found in 1873, an attempt was made to reconstruct Saint's sewing machine, but it was necessary to modify the

construction before it would stitch at all. This raised the question whether Saint had built even one machine. Nevertheless, the idea was there, and had the inventor followed through the sewing machine might have been classed as an 18th-century rather than a 19th century contribution.

Barthelemy Thimonnier (1793-1857)



Barthelemy Thimonnier was a man of French descent whose father was a textile dyer of Lyon. Barthelemy learned the tailoring trade after he was forced to leave school due to financial pressures. Many of the villagers were weavers and he noticed what a short amount of time was required to weave a fabric on a loom, compared to the painstaking work of sewing a garment by hand. He wanted to invent a machine to do this work. His village also produced a type of embroidery called point de chainette, in which a needle with a small hook was used to form the chainstitch. It was Thimonnier's idea to use this type of hooked needle and produce the stitch by machine.

Ignoring his tailor shop to the point where his neighbors thought him crazy, Thimonnier worked secretly on his invention for four years. In 1830 he received a patent on his machine, which produced the chainstitch by means of a needle shaped like a small crochet hook.

By 1841 he was successful in having eighty machines in use sewing army clothing in Paris. But the fears of the tailors could not be quieted and the machines were destroyed by an infuriated mob. Thimonnier was forced to flee for his life, and he died penniless in England.

Walter Hunt (1796-1860)

Walter Hunt was born in New York and spent most of his adulthood as an inventor. He was known for his generosity, frequently giving away what little wealth he had when he did not have enough to provide for himself and his family. Sometime between 1832 and 1834 he produced a sewing machine that made a lockstitch. It represented the first occasion an inventor had not attempted to reproduce a hand stitch. Future inventors were thus no longer hampered by the erroneous idea that the sewing machine must imitate the human hand and fingers.

The lockstitch required two threads, one passing through a loop in the other and both interlocking in the heart of the seam. Hunt did not consider his invention any more promising than several of his other inventions, and he sold his interest for a small sum. During the next 33 years, Hunt obtained 26 patents, for inventions as diverse as a coach alarm, an ice boat, and a fountain pen.

Elias Howe, Jr. (1819-1867)

Elias Howe, Jr. was born in Massachusetts to an impoverished farm family that "leased" him to a neighboring farmer when he was still a young boy. He received room and board for several years in return for doing chores. At the age of sixteen, he left home for Boston and eventually worked as a machinist, earning \$9 a week. After he married, he quit work due to a chronic illness, and his wife took in sewing to support the family. The sight of his wife toiling at her stitches, plus the ever-present threat of poverty, convinced Howe of the need for a sewing machine. Watching his wife for hours at a time, he tried to duplicate the motion of her arm. He completed his first model in 1845, set it up in a public hall, and had a race with five seamstresses, finishing five seams before any of them had completed one. However, he did not receive a single order.

Howe traveled to England to try to sell his sewing machine there without success. Upon returning to America, though, he found that sewing machines had become quite popular in his absence, and that most of them utilized all or part of his patent. He won several lawsuits, the first of which gave him \$25 for every competitor machine sold. In 1856, he formed a "Combination" with the companies of Singer, Wheeler & Wilson, and Grover & Baker, whereby he received \$5 for each machine sold in the United States and \$1 for each machine exported. He earned over \$2 million dollars before the patent expired in 1867. People complained that the "Combination" slowed sewing machine improvements, but in the period immediately following its cessation, only a few improvements were made, and most of them by the member companies.

Isaac Merritt Singer (1811-1875)



Isaac Singer, whose name is synonymous with sewing machines, was the eighth child of poor German immigrants from New York. He started work as a mechanic and cabinetmaker at the age of twelve but his first love was the theater. He became an actor without much financial success. In 1839 he completed his first invention, a mechanical excavator, which he sold for \$2000.

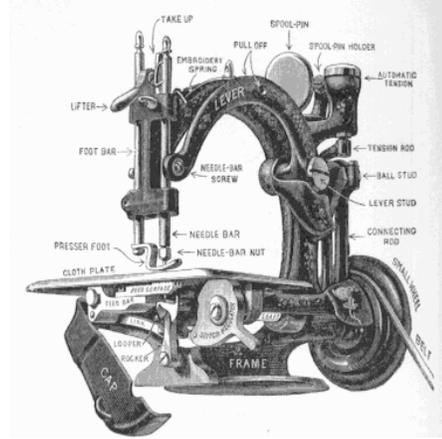
Singer patented a type-casting machine for book printing and displayed it in a steam-powered workshop run by Orson Phelps.

Phelps was involved in designing sewing machines; however, customers kept returning them because of faulty design. Singer examined the machines with the eye of a practical machinist. Phelps's shuttle passed around a circle; Singer suggested that the shuttle move to and fro in a straight path. Phelps' machine had a curved needle that moved horizontally; Singer proposed a straight needle to be used vertically. Phelps encouraged Singer to give up the type-casting machine and concentrate on the sewing machine.

Singer made his fortune in the sewing machine business. He had an acute business mind and initiated a number of merchandising practices of major importance, such as installment buying, advertising campaigns, and the provision of service along with sales. He retired in 1863 to live in Paris and England.

Willcox & Gibbs Sewing Machines

The Willcox & Gibbs Sewing Machine Company was started in 1857 as the answer to Singer's more expensive machines. In 1855, James Gibbs, a 24-year old farmer, first saw a woodcut illustration of a sewing machine, and out of curiosity, he devised his own machine. Two years later, while visiting a tailor in Virginia, he noticed a Singer sewing machine, which he thought was too heavy, complicated, and exorbitantly priced. Recalling his own invention, he teamed up with James Willcox whose family was already involved in building models of new inventions. Together, they manufactured chainstitch sewing machines, which, on a simple iron-frame stand with treadle, sold for approximately \$50. Similar machines sold for \$100. The Singer company then brought out their own light family machine in 1858, but it also sold for \$100. The Willcox & Gibbs Sewing Machine Company prospered and even into the 1970s was producing commercial machines, many of which were based on the original chainstitch principle.



Helen Augusta Blanchard, Inventor of the Zigzag Sewing Machine

...I often heard (Elias Howe) say that he worked fourteen years to get up that sewing machine. But his wife made up her mind one day that they would starve to death if there wasn't something or other invented pretty soon, and so in two hours she invented the sewing machine. Of course he took out the patent in his name. Men always do that. - Russell Conwell, 1877

As intriguing as this statement is, we will never know if the credit for the first sewing machine should actually go to Elias Howe's wife, Elizabeth Ames Howe. What we do know is that of the thousands of sewing machine patents granted in the past 150 years, hundreds of them have been by women. Notable among them is Helen Augusta Blanchard (1840-1922) of Maine. Of her 28 patents, 22 of them deal with sewing machines; she is particularly known as the inventor of the zigzag sewing machine. The model for her 1973 overseaming machine can be seen at the Smithsonian.

Blanchard, born into a rich ship owner's family, showed early aptitude for mechanical inventiveness, although she received no formal training along that line. She patented her first invention after her family was left in financial straits by business losses suffered in the panic of 1866 and her father's death. She had to borrow money for her first patent fee. In 1881 she established the Blanchard Over-seam Company of Philadelphia. Profits from this company and her other patents provided her with enough money to buy back the family homestead they forfeited earlier. As she became secure financially, she was very supportive toward other women less fortunate than she and was known for her generous, unpretentious manner.

Early Home Sewing Machines

The sewing machine promised a revolution in household labor. Dubbed "The Queen of Inventions" by Godey's magazine in 1860, the sewing machine offered women a relief from the countless hours and tedium of hand sewing. Early sewing machine manufacturers recognized this market potential and promoted their machines accordingly. The exorbitant cost of these early machines meant that they were well beyond the means of most American families. A sewing machine cost about \$125 at a time when the average yearly income was about \$500. Many communities and organizations pooled their money to purchase a single machine for members to share. Since this curtailed manufacturer's potential profits, various schemes were devised to expand the market. In 1856 the I. M. Singer Company offered a hire/purchase plan where machines could be bought on monthly installments. Sales of Singer machines tripled in the first year of this offer.

The lease/purchase option soon became the most popular way of buying a sewing machine. Some unscrupulous manufacturers took advantage of the mania to acquire a machine. Stories of foreclosure and financial ruin, exploitation, and abuse of women sewing for credit (in lieu of paying cash) are also part of the early history of the home sewing machine.

The Paper Pattern

As the story goes, one day Ellen Curtis Demorest (1824-98), a prosperous hat manufacturer, saw her maid cutting out a dress from some wrapping paper and was struck with the idea that she could copy fashionable garments on to paper for the home sewer. However, it has been verified that, aided by her sister and husband, they devised a mathematical system to print patterns in a variety of sizes. In 1860 Madame Demorest's *Mirror of Fashions*, a pattern catalog, was introduced and by 1865 Demorest was so successful that she had thirty distribution agencies across the nation with over 200 saleswomen. Her success in paper patterns spawned a mail order empire for women eager to acquire the latest fashions and accessories from New York. An ardent abolitionist and women's rights advocate, Ellen Demorest employed both black and white women in her enterprises. Those who objected to her politics were asked to shop elsewhere.

Ironically, the Demorests failed to patent their paper pattern but another inventor, Ebenezer Butterick, did. Initially Butterick confined his patterns to men's and children's wear, but by 1867 he expanded to women's patterns as well. By 1874 his empire extended from Europe to North America with over 100 branch offices. It remains the center of the paper pattern industry today.

The Social Effects of the Sewing Machine

The introduction of the sewing machine into American life had both positive and negative effects. A boon to the homemaker and seamstress, its use in industry reflected both the



advantages and the social problems brought about by the Industrial Revolution.

The development of the sewing machine for factory use in the 1850s revolutionized the shoe and garment industries. Production moved from homes and small shops into large, machine-controlled environments dominated by impersonal managements. Production increased and prices fell, but workers suffered loss of independence, lower wages, and sometimes harsh working conditions. Hundreds more faced unemployment. The situation became even worse when the addition of electric motors to the machines led to sweat shops. The ensuing social upheaval contributed to large-scale unrest, the organization of workers into unions, and eventually to the establishment of government standards for the work place.

In a quieter, more "lady-like" way sewing machines also revolutionized the domestic scene. Although some ready-made clothing was available as early as Roman times, until the late 19th century nearly all clothing was made in the home. According to Godey's Lady's Book, it took about 14 hours to make a man's dress shirt and at least 10 for a simple dress. A middle-class housewife spent several days a month making and mending her family's clothes even with the help of a hired seamstress. After the purchase of a sewing machine--and suitable training and practice--those hours dropped to 1 1/4 for the shirt and one hour for the simple dress. The itinerant dressmaker was forced to find another way to make her living. In fact, the greater efficiency of the sewing machine made it possible for an enterprising housewife to "take in sewing" for extra money just as working class women took in washing.

Women's advocates and ladies magazines welcomed the relief from the hard labor and rejoiced in the hours freed for leisure and worthwhile pursuits such as "refinement and exercise". But as often happens with labor-saving inventions, ease of production brought demand for higher quality results, again making the work harder.

The sewing machine was only the first of many labor-saving devices for the home; washing machines, dryers, dishwashers and vacuum cleaners all made housekeeping easier and cut down the work time required. An important side effect of all this "labor saving" has been the disappearance of hired help and the consequent diminishing of the woman's role as household manager. This gradual loss of status helped to undermine the satisfaction many women formerly found in the homemaking role and encouraged them to seek more demanding employment in other places.

Sewing Machines Out West

With the opening of the West by the late nineteenth century, home sewing enjoyed renewed popularity. For families who had neither the resources for nor access to ready-made clothing, homemade clothing remained the norm. Numerous women's diaries list sewing for the family as the most common domestic activity for women. Those women fortunate enough to have machines to assist them, often worked as community dressmakers to bring in extra income. They would work for about one dollar a day.

By the late 1860s sewing machine costs had dropped dramatically. Sophie Best wrote to her parents from her homestead in Minnesota:

It is wonderful what progress civilization makes! My head is filled with those pretty sewing machines that are being bought by so many families and are so delightful to have! Some people have been able to get these little fairies for between \$10 and \$60. The stitches they make are so strong, so pretty and so guide to make.

Sewing machines still remained a luxury for many pioneering families. As Laura Ingalls Wilder recalled, her mother had always wanted a machine but the family could not afford one until the girls were grown. Even then it remained an expensive purchase:

As Pa lifted the blanket away, there stood a shining new sewing machine. Ma gasped. "Yes, Caroline, it is yours!" Pa said proudly, "I had to sell a cow anyway."

For women living in the new cities of the West, sewing machines and mail order paper patterns and fabrics ensured that they could be as fashionable as any woman in the eastern cities they left behind.

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