

**SEWING MACHINE** (from *sew*, AS. *seowian*). It is probable that the first sewing machine was made by an Englishman named Thomas Saint and was patented July 17, 1790. Though made of wood, it resembles the later successful machines in that it had an overhanging arm, vertically reciprocating needle, continuous thread, and automatic feed. This machine had a notch instead of an eye in the needle, for the thread to pass through, and a hole was punched by an awl for the needle to pass through. It produced a single-thread chain stitch. In 1830 Barthélemy Thimonier produced a sewing machine which was patented first in France and some time afterward in the United States. This machine was so far successful as to be employed to make clothing for the French army, and it thereupon was destroyed by an ignorant and furious mob. Thimonier's first machine was also of wood, but he afterward constructed one of metal, driven by a cord and treadle. It had the overhanging arm, flat cloth plate, vertical post, vertical reciprocating needle, continuous thread, and presser foot of the modern machine. The needle was hooked and had to be passed backward and forward through the cloth twice to complete a stitch. In 1841 Newton and Archbold patented in England a machine using an eye-pointed needle and producing a chain stitch.

About the same time that the French machine was being perfected Walter Hunt is said to have made a sewing machine having the double thread and lock stitch which was characteristic of the Howe machine. Hunt, however, failed to perfect or patent his invention for so many years after it was first put upon the market that when at length he applied for a patent it was denied him.

In 1846 Elias Howe (q.v.) patented a sewing machine containing most of the essential features of the modern machine. The needle was curved and moved back and forth horizontally instead of vertically. The machine, crude as it was, included the grooved eye-pointed needle and the automatic feed and produced a lock stitch by means of a shuttle operating on the opposite side of the cloth from the needle. Howe was for many years engaged in suits for infringement upon his patents. In these he was successful, and, unlike most of the earlier inventors, he received a large fortune from royalties.

In 1849 John Bachelder patented a machine which was the first to combine the horizontal table and the continuous feed device. The latter consisted of an endless band of leather set on to small steel points. These points projected up through the table and, penetrating the material, carried it to the needle.

A. B. Wilson invented in 1852 the vibrating double-beak shuttle and in 1854 the four-motion

feed. The latter invention—the serrated metal bar covered with forward-pointing saw teeth—is the familiar feed plate now used on almost all machines. This toothed bar (1) rises through a slot in the table, (2) moves horizontally forward to advance the cloth, (3) drops below the table, (4) moves horizontally back again to its starting point below the table.

In 1851 Isaac M. Singer patented a sewing machine having a fixed overhanging arm and a vertical needle. He also introduced the foot treadle, previous American machines having been operated by turning a crank with the hand. The most important invention which he contributed was the presser foot, with a yielding spring.

There are two types of domestic sewing machines: those making a lock stitch and those producing a chain stitch, or the double and single thread machine. Some double-thread machines produce a chain stitch. Each type has its adherents among seamstresses. The lock stitch resembles weaving in its formation, while the chain stitch resembles knitting and is easily raveled. According to the census for 1900, 90 per cent of the machines built for household use have the lock stitch. The modern household sewing machine has been developed to a high degree of efficiency and usefulness. Many attachments are supplied, so that its range is widely increased. Thus it is now possible to embroider, buttonhole, shirr, hem, tuck, darn, gather, and do various other forms of sewing with facility on one machine, while in clothing and other factories special forms are adapted for single operations.

Among the sewing machines for doing special kinds of work or work on special materials are the shoe and leather sewing machines, the carpet-sewing machine, and the buttonhole machine. By far the most important of these, in practical results attained, is the shoe-sewing machine. The McKay machine was invented in 1858 by Lyman R. Blake and with its numerous improvements exerted a tremendous effect on the shoe industry. It was developed by Colonel McKay and was the result of three years of patient labor and of an expenditure of over \$130,000 before practical results were attained. This machine was used extensively both in the United States and in Europe, but it possessed the disadvantage that the shoes, though strong and comfortable when first made, could not be resoled except by pegging or nailing and possessed in addition soles stiff and lacking in flexibility. In the Goodyear welt machine, for which patents were granted in 1871 and 1875, a welt was sewed to an upper, and this welt in turn was fastened by an external row of stitches to the sole. Shoes made in this way were much more flexible and could be half-soled by the shoemaker by the ordinary process of hand sewing. This machine at once found application to the manufacture of fine boots and shoes, and on it at the present time are made nearly all of the finer grades of men's shoes.

The first machine for sewing leather and other heavy materials was patented by J. J. Greenough in 1842, but did not come into extended use. The following year a similar machine was patented by George H. Corliss, the inventor of the Corliss engine. It had two needles with eyes near their points, which worked horizontally through holes previously punctured by awls. The movements were derived from cams

on a revolving shaft, and the feed was automatic. Leather-sewing machines are now used in all branches of the leather industry, including the sewing of the uppers of shoes and the different kinds of stitching required in the manufacture of gloves.

A buttonhole machine was first patented by Humphrey in 1862, but the Reece buttonhole machine, patented nearly 20 years later, first brought the art of making buttonholes by machinery to its present state of perfection. There are several styles of these machines now on the market.

An invention patented in 1894 is a machine for sewing the breadths of carpeting. It differs from other sewing machines in that it, and not the material, moves along as the process of sewing advances.

**Statistics.** The value of the export trade of the United States in sewing machines for the fiscal year specified was as follows: 1900, \$4,541,774; 1905, \$6,104,279; 1910, \$7,513,852; 1911, \$9,039,840; 1912, \$9,947,312; 1913, \$11,573,746; 1914, \$11,494,801; 1915, \$6,223,521. According to the Thirteenth United States Census (Manufactures) there were, in 1909, 47 establishments in the United States engaged in the manufacture of sewing machines and cases. These factories had a combined capital of \$33,103,704, and the value of their annual product was \$28,262,416. Of these there were six establishments making sewing-machine cases, with an output valued at \$2,492,742. In 1860 there were 88 factories, but the total amount of capital invested was only \$1,494,450, and the annual product was \$4,403,206. The popularity of this industry seems to have been at its height in 1880, when 124 factories were in operation. This is accounted for by the fact that in 1877 the disorganization of the sewing-machine combination, which controlled patents covering several of the essential features of the sewing machine, was effected, and thus the field was opened to numerous small manufacturers. Consult: Byrn, *Progress of Invention in the Nineteenth Century* (New York, 1900); "Manufactures," in *Twelfth Census of the United States*, vol. x, and *Thirteenth Census of the United States*, vol. viii (Washington, 1902, 1913); P. N. Hasluck (ed.), *Sewing Machines* (New York, 1905).