

Feature



Vintage Sewing Machines *Courtney Willis*

An award-winning science educator and occasional costume masquerade participant talks about vintage sewing machines and their impact on society.

The sewing machine is a major part of any costumer's life. No one involved in making costumes of any type can ever imagine life without one. The oh, so necessary sewing machine has a long and fascinating history.

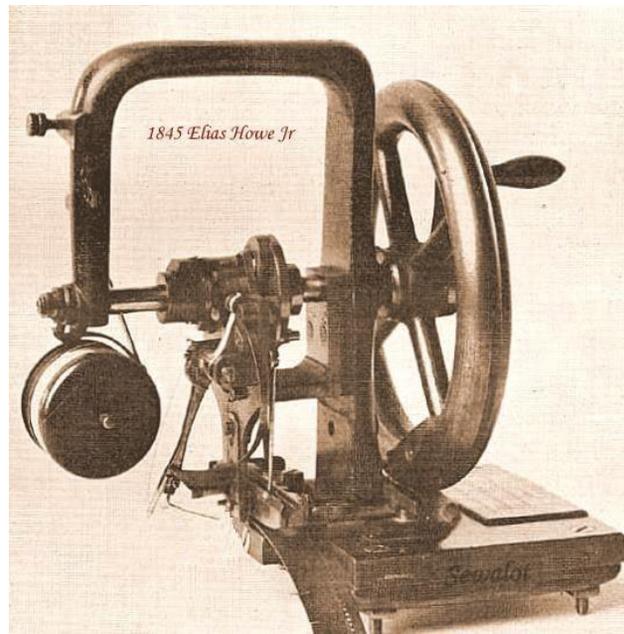
I first became interested in sewing machines and how they work when my daughter called me long distance several years ago. She's a costumer (her costuming group has received numerous awards at Comic Con, BayCon, and Worldcon). She called because she was sewing a costume for Comic Con, and her sewing machine had just stopped working, and she needed to vent. Because it is hard to fix anything long distance, I could only tell her to take it to a sewing machine repair shop and see if it could be fixed.

Since her sewing machine was a 35-year-old hand-me-down, I got to thinking a new machine might be a nice present for

Christmas. As I started to research what would be a good machine, I realized that I really did not understand how sewing machines worked, so I decided to find out. The more I researched their mechanics and their history, the more fascinated with them I became.

Evolution of the Sewing Machine

The early development of the sewing machine was marked with a great many lawsuits over who first invented what. It also occurred during a time of national unrest leading up to the Civil War. By 1865, the

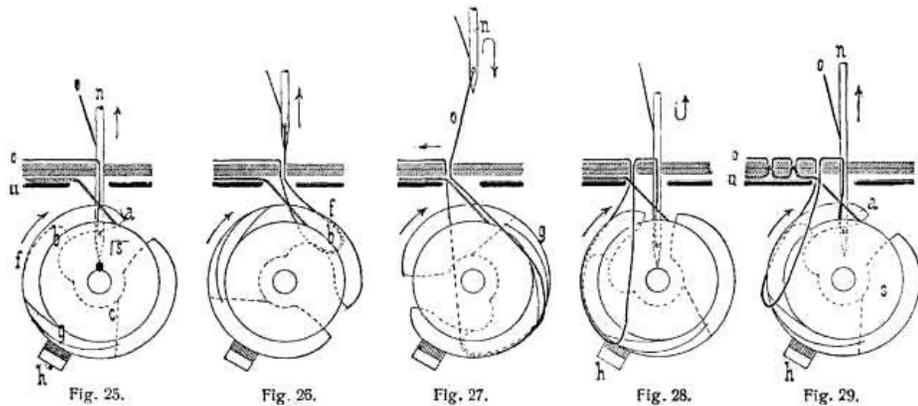


Elias Howe's machine looked nothing like Isaac Singer's but it had the Howe patents that Singer may have copied.

early development squabbles had been settled and the end of the Civil War brought an end to the unrest in the country. This allowed both the country and the sewing machine industry to thrive, helped along with several technological advances.

The home sewing machine began to appear in the mid-1860s, about the end of the Civil War. The sewing machine as we know it had actually been invented a decade or so earlier, but those first machines were not necessarily intended for the home; they were mostly for tailors and small companies. The Singer machine was so rugged it could sew leather, therefore it was also quickly adopted by cobblers for making shoes. Only a few of these early machines actually made it into homes. They were complicated, clumsy machines, and most people thought that they were very unfeminine and women would not be able to operate them.

The first successful sewing machines developed about the middle of the 1800s. The sewing machine that Elias Howe had originally patented in 1846 (left) looked nothing like our modern sewing machines, but it contained two fundamental concepts that are still used in most machines today. The first was a needle with an eye at the pointed end. Unlike modern machines, however, Howe's machine had the needle moving horizontally while the cloth hung vertically from a baster plate. It could only



Step-by-step sequence shows how a lockstitch is made with eye-pointed needle and rotating shuttle carrying second thread. See Wikipedia [article](#) to view animations..

sew a few inches before the sewn cloth had to be removed from the baster plate and a new section of cloth had to be attached for the next few stitches. Howe's second fundamental concept was the "lock stitch", the way in which the thread held the fabric together. The stitch was actually made by interlocking two threads, one from the needle and one from a bobbin on the other side of the cloth.

Although Howe's machine was cumbersome and could only sew straight seams, it was faster than sewing by hand. Howe tried unsuccessfully to market his machine in the U.S. and went to England hoping for a better response. Although Howe had little success in England, upon his return to the US, he found several other companies had also been developing sewing machines of their own. Among these were Grover and Baker, Wheeler and Wilson, and of course Singer. Singer's machine (right) was probably the first machine most of us would recognize as a sewing machine. The

needle moved vertically up and down and the cloth rested on a horizontal plate.

All the machines of the time were operated by a hand crank. The right hand turned the crank while only the left hand fed the cloth into the machine. Singer added a clever device to his

machine. By placing the sewing machine on top of the shipping crate it arrived in, a treadle could be used to turn the crank. Since the machine was not intended for the home, the shipping crate did not have to be a nice piece of furniture.

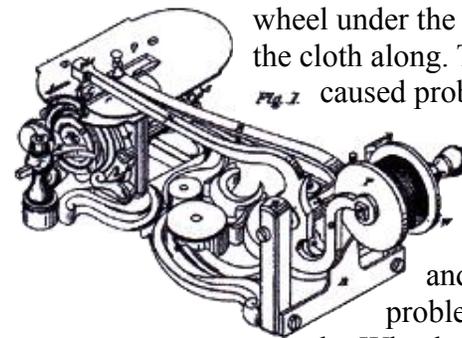


The first Singer sewing machine debuted in 1851.

One of the problems the early machines had was how to move the cloth under the needle.

Hanging cloth from a baster plate was not going to be popular. Most of the machines used a

A key feature of sewing machine development, the four motion feed is considered one of Allen B. Wilson's finest innovations. Although he patented it in 1854, Wilson was marketing a machine some time before his 1852 stationary bobbin patent that incorporates the same four motion feed.



wheel under the needle to move the cloth along. This, however, caused problems because the needle tended to get caught in the moving fabric and get bent. The problem was solved by Wheeler and Wilson

with the invention of the four-motion feed. With this feed, metal teeth or feed dogs pick up the fabric after each stitch, moving the fabric, setting the fabric down, and then returning to its original position so it can pick up the cloth after the next stitch and start all over again.

Because every new idea was quickly incorporated into competing machines, lawsuits were rampant. Soon the sewing machine business became one of litigation rather than building sewing machines. Shortly before the Civil War, a lawyer from the Grover and Baker company suggested the big four -- Howe, Grover and Baker, Wheeler and Wilson, and Singer -- get together and form a patent pool. They became known as the Sewing Machine Combination and thus controlled and monopolized sewing machine manufacture for the next twenty years. Members of the combination could use any of the patents,

but other companies would have to pay a license fee or be sued. The Combination was the first major industrial patent trust and allowed the members to get back to the business of making and selling sewing machines.

The first machines were too expensive for the home. The machines ran about \$100, and an average annual household income at the time was only about \$400. In modern terms, the relative cost would be equivalent to between \$10,000 and \$20,000, a huge investment for an average family. Singer's partner, Edward Clark, finally hit on an idea to make the machines more affordable. Instead of requiring full payment upon delivery of the machine, Clark's idea was to deliver the machine with a small amount down and regular weekly or monthly payments. Thus, credit and the time payment plan was developed. This was a totally new economic idea at the time. Soon all sewing machines were being sold in this way, and today nearly all major purchases are purchased on credit.

Singer also realized that the U.S. was not the only market, but shipping heavy sewing machines across the ocean would be very expensive, so Singer started manufacturing plants in a number of foreign countries, including Scotland, Germany, Russia. Singer thus became the first major multinational corporation.

Although the sewing machine had burst upon the scene in the 1850s, it was not until the end of the Civil War that it started



German Gritzner from about 1900 was called a "High Arm" machine because the arm was raised a bit higher than on the Singer Model 12. The rest of the sewing mechanism was copied from the Model 12, which first came out in the mid 1860s. Much of the decoration on the bed of this machine is not paint but is inlaid Mother of Pearl.



While not in pristine condition, this Model 27 shows the Egyptian Memphis decal decoration. This machine was my wife's grandmother's grandmother's sewing machine. It was used continuously for over 80 years and still works well!

to become a regular household item because the general unrest in the country leading up to the war itself prevented additional development. It had taken more than a decade for the general design of the sewing machine to be worked out. This design included a vertical, eye-pointed needle; cloth being placed on a horizontal plate, moved along with a four motion feed, and stitched together with a two-thread "lock stitch." The major manufacturers had settled their differences, and a method had been developed which allowed families with modest incomes to purchase a machine. Now all that was needed was a machine appropriate for the home.

In the mid-1860s, Singer introduced a new Model, the Model 12, which was aimed directly at the home market. The Model 12 would continue to influence the market for the next fifty years. Long after Singer introduced new models, the Model 12 was still being copied by other manufacturers around the world. The Model 12 was to become the standard for Singer models for many years.

Singer often had model runs that lasted for several decades. In the mid-1880s Singer introduced its vibrating shuttle machines for the home. These machines used a long slender bobbin inside of a bullet shaped shuttle. They were originally known as the full-sized Model 27 and the ¾-size Model 28. With minor modifications, these became the models 127 and 128 which were continued up through the 1950s. My wife's

grandmother inherited a Model 27 from her grandmother and after six generations it still sews. The durability of Singer machines is one of the reasons for the long model runs.

Perhaps the record for longevity goes to Singer's Model 15. It was originally introduced in 1879 and was the first Singer home machine to use the modern round bobbin. In fact, many modern machines still use a Model 15 bobbin, and the Model 15 needle is today's standard universal needle. In the early 1930s, the Model 15 underwent some major updating. It could now sew backwards! Till then if you needed to sew backward, you had to turn the material around, not the easiest way to lock the stitches.

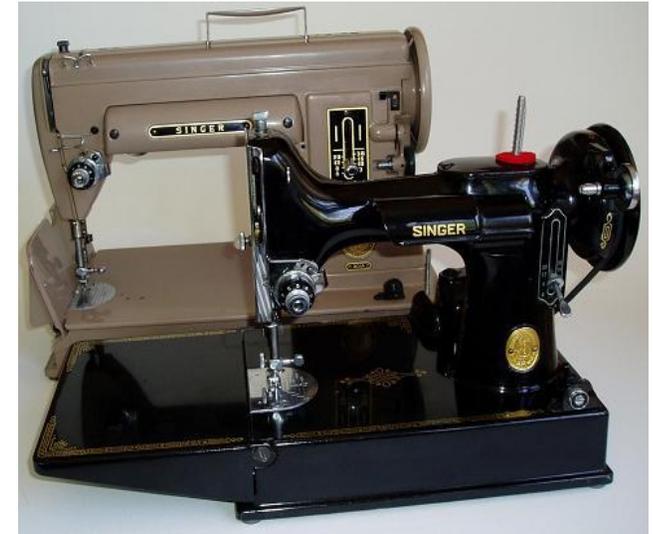


This is a Singer Model 15 from 1951. The badge on the machine identifies it as a centennial machine marking the 100th anniversary of the Singer Company. The Model 15 can be identified from other Singer models because the tension control sticks out to the left as you sit at the machine ready to sew. The Japanese HA-1 machines are nearly an exact copy of this machine.

The Model 15 was very robust and could sew through just about anything. It was often called the “farmer's wife” because it could sew clothing, feed bags, and even the occasional leather strap. It started as a treadle machine, but when electricity came along, first a belt drive electric motor was added and then a gear drive motor. The Model 15 continued as a regular in the Singer lineup through the 1950s as their number two machine. By the 1980s, Singer had halted production in the U.S., but manufacture of the Model 15 was continued in Japan, and today it is still being manufactured in China and India for the third world market. For \$500 dollars, you can buy a brand new Model 15 in a treadle cabinet today, although the manufacturing is not up to the original Singer standards.

The 1930s saw Singer make a number of refinements in existing models and introduce two of their most important models. At the 1933 Chicago World's Fair, Singer introduced their now-famous Model 221 Featherweight. The Featherweight was a half-sized machine made of aluminum. It weighed less than twelve pounds, as compared to a standard machine's thirty to forty pounds; hence the name "featherweight." It was manufactured to very high standards and was one of the first Singer home machines to be offered as only an electric machine.

Up until this time, most Singer electric machines were also offered as treadles and hand cranks. The Featherweight was a



The small black machine in front is a famous Singer Model 221 Featherweight. Behind it is its big sister, the Model 301. Both machines have essentially the same mechanics, and both also have a flip-up extension table which make bobbin access very easy.

portable machine and came with its own luggage-style carrying case. Because of the quality of the machine and its convenient size, the Featherweight has become a favorite with modern quilters. A properly tuned Featherweight can produce as fine a stitch quality as the new computer machines.

The first new machine Singer designed after World War II, the Model 301, introduced Singer's famous “slant needles,” but the rest of the mechanism was based on the Featherweight. Although most vintage sewing machines do not often bring very high prices, Featherweights often fetch prices in the \$400 to \$600 range, three to four times their original purchase price.



The Singer Model 201 is perhaps the finest sewing machine ever built. It is solid, gear-driven, and heavy, which means it sews very smoothly.

The other famous machine Singer introduced in the 1930s was the Model 201. In the U.S., most 201's had a built-in gear drive motor. Like the featherweight, it was also built to a very high standard. It was a full-sized steel machine weighing about thirty pounds and, because it also had a full rotary drive, it was a very smooth-operating machine. It was Singer's most expensive, top of the line, home sewing machine. If you take a quick look on the internet, you will see that many experts consider the Model 201 to be the finest sewing machine Singer ever produced.

Singer was not the only sewing-machine manufacturer, although for the first one hundred years it sold sixty to seventy percent of the world's sewing machines and was the undisputed leader in the U.S. The second place manufacturer for many years was White. White was one

of the few manufacturers that matched the quality of the Singers. Unlike Singer, which did not manufacture machines under other names, White and most of the other U.S. manufacturers would put any name you wished on the sewing machines if you ordered enough machines. Machines with names like Domestic, Minnesota, or Franklin were all manufactured by White. Notably, White manufactured most Kenmore machines for Sears and Roebuck right up to the 1950s.

The White internal mechanism was quite robust and did not change much, but through the 30s, 40s, and 50s White would change the cosmetics and external designs to make



Willcox and Gibbs was another early sewing machine manufacturer. Their machines changed very little over the years. This composite shows the three common ways in which sewing machines were powered: treadle, hand crank, and electricity. Willcox and Gibbs was the undisputed leader in quality chain stitch machines; therefore a number of companies made copies of the machine when the patents expired, and even Singer was forced to come out with a competing machine.



it appear as if they had just introduced a new model. To compete with the Singer Featherweight, in the late 1930s White brought out its own version of a Featherweight. White's Featherweight was really their normal full-sized machine but with a body made of magnesium, a metal even lighter than aluminum.

Other important manufacturers in the U.S. were the National Sewing Machine Company and the New Home company. National supplied machines to many of the large mail order houses, including Macy's, Wanamaker's, Marshall Field's, and Montgomery Ward Company.

Another company that at least deserves a mention is Willcox and Gibbs. Gibbs was a farmer in Virginia when he saw a sketch of a sewing machine in a paper. He decided to sit down and figure out how it must work. Since Gibbs could only see the top of the machine in the sketch, he did not know of the bobbin thread, so he invented a machine that would sew with only a top thread; this stitch was

named the twisted chain stitch. A couple of years later he saw a real sewing machine and decided his invention was much simpler and could be built much more cheaply, so he patented his device and went north to get some help producing and marketing his machine. In 1857 he met James Willcox and his son Charles, who were in the business of promoting new inventions.

Unlike other sewing machine companies who manufactured their own machines, the new Willcox and Gibbs company decided to contract out the actual manufacture of their machines to another company. The company they chose was the Brown and Sharpe company. Brown and Sharpe agreed to manufacture the Gibbs machine on the condition they could use the "American System." This was the concept that all parts would be totally interchangeable. It took a few extra months of preparation, but once set up, quality machines could easily be turned out. For the next ninety years, Brown and Sharpe manufactured Willcox and Gibbs sewing machines. This meant that Brown and Sharpe had a steady income and could concentrate their research on other manufacturing problems.

Brown and Sharpe set many manufacturing standards, such as the American Wire Gauge (AWG) sizes, along with standards for machine tool spindle tapers and worm threadforms. These manufacturing standards are some of the lasting legacies of Brown and Sharpe, and

made it one of the best-known and influential firms in the manufacturing industry. On another note, one of Brown and Sharpe's head sewing machine mechanics, Henry Leyland, later founded the Cadillac Car Company which was the first car company to manufacture cars with totally interchangeable parts.

The Willcox and Gibbs machine was versatile, and people quickly found that it could be adapted to specialized purposes, such as the sewing of straw hats. Because of this, straw hats became the rage in the latter part of the 1800s, with wide-brimmed straw



The success of the Willcox and Gibbs machine obliged Singer to come out with a competing machine once the Willcox and Gibbs patents had expired. The mechanics were largely based on the Willcox and Gibbs machine. This is an electric Singer Model 24 from the 1920s. The motor and speed controller were hidden under the plate, and the hole on the right side of the case was for a knee lever to operate the controller.

hats for women and straw boaters for men. The Willcox and Gibbs machine was easily adaptable for other purposes, therefore most of the machines were manufactured for commercial businesses and only a small percentage for homes.

Because of the success of the machine, after the patents for the Gibbs machine ran out, other sewing machine companies were forced to come out with competing models. Most companies simply copied the Willcox and Gibbs design directly, but Singer came out with their Model 24 (left). Internally the Singer Model 24 relied heavily on the Gibbs mechanism, but externally it had a more familiar sewing machine shape. It was only fair that Singer was finally able to borrow a design from another manufacturer, as so many other companies had based their designs off of earlier Singer designs.

After World War II, the sewing machine world started to change drastically. The same machines that had manufactured guns could be easily adapted to the manufacture of sewing machines. The first major innovation in the late 1940s was the Necchi BU machine, which was the first home machine with a zigzag stitch. It made quite a sensation, and soon other European manufacturers were also introducing zigzag machines. In the early 1950s, Elna introduced their famous Supermatic. This was a machine that would not only sew straight and zigzag but would automatically sew a large number of decorative stitches by inserting special cams into the machine.

Japanese manufacturers took a different tack. Rather than relying on new innovations, a number of Japanese manufacturers got together and designed a standard model (the HA-1) based on the Singer Model 15. Most parts were interchangeable between their machines and the Singers. The Japanese found they could manufacture a high-quality machine in large numbers, which meant they were far cheaper than the domestically produced machines. Sears and Wards quickly dropped their contracts with White and National, and began importing their own machines from Japan. Soon, even White was importing machines from Japan and labeling them as their own.

Singer had been slow to respond to the new competition. Their first zigzag machines were really just catch-up machines, and even though their 400 and 500 Series machines were very competitive in the early 1960s, the end was in sight. Singer continued to lose market share and was never again able to dominate the market the way it once had. Eventually, even Singer was forced to stop manufacturing its own machines and started importing them.

Today Singer still accounts for about half the U.S. market, but Singer is no longer a manufacturer. It imports its machines from the orient. At the beginning, Singer had very long model runs, often measured in decades. Today some of Singer's models runs can be measured in months.

Lasting Cultural Effects

It is interesting to note how the sewing machine has changed our modern society. Automatic looms were invented about 1800 which made cloth much easier and cheaper to produce, but there was still no easy way to turn that cloth into clothing and other goods. Before the sewing machine, the middle class often had only one or two changes of clothes and perhaps a nice set of clothes for Sunday and special occasions. The poor usually had only one set and had to wear the same clothes every day.

At the beginning, Singer had very long model runs, often measured in decades. Today some of Singer's models runs can be measured in months.

People could not buy ready-made clothes in stores. If a man needed a new set of clothes, he would go to a tailor to have them specially made to fit. Women went to a dressmaker. This assumed the man or woman had enough money; otherwise, the woman of the house had to make all the household clothing, plus bedding, linens, and all other soft goods. Women would often spend 60 to 70 percent of their time involved in sewing-related activities. A man's shirt, which did not include collar or cuffs because they were detachable at the time, would take eight to ten hours of hand sewing to complete. With a sewing machine, that could be cut to less than an hour.

The sewing machine also started to influence fashion. In the early 1800s, before the sewing machine, the Empire-style dress was popular, the style of dress the women wear in all the Jane Austen movies. Although they contained a lot of material, they were actually a rather simple design, as they had to be stitched by hand. By the end of the century, however, the style was Victorian, with all its tucks and ruffles and pleats, a far more complicated fashion which would not have been possible without the sewing machine.

The sewing machine also introduced ready-made clothing for men. During the Civil War, millions of men had to be measured for and fitted with uniforms. After the Civil War, when looking at all of the measurements, it was noticed that small men generally had shorter arms, shorter legs and smaller waists than larger men. In other words, men were generally of similar proportions whether they were large or small, so clothing did not have to be custom-made for each man. It could be made in a few sizes from small to large and would still fit most men reasonably well. (The concept of shoe sizes was also developed at this time, so instead of going to a cobbler to custom make a pair of shoes, shoes could be manufactured in just a few general sizes.)

Since clothing did not have to be made to order, factories could be set up to manufacture the clothing in standardized sizes. The clothing could also be sewn on sewing machines, so they could be produced

in large numbers, which lowered the cost of the clothing, at least for men. Unfortunately, there was no large database of women's proportions, and no proper Victorian woman would allow someone to take such measurements of her body, so women's ready-to-wear lagged men's by nearly fifty years, and did not come into common practice until about the 1920s.

Before the 1920s, women lived with their parents until they got married, but in the years after World War I, young women began going to the big city, getting jobs, and earning their own money. Instead of staying at home making their own clothes, they could use their money to buy ready-made fashions. Since women were no longer living at home and had much more free time than in any preceding period of history, the custom of dating became popular, and the flapper came of age. While the sewing machine cannot take all the credit for the creation of dating and the flapper -- after all, the automobile and the back seat were also a huge factor -- the sewing machine did play an important role.

The availability of ready-made clothing in the 1920s caused a decline in the sales of home sewing machines. The sewing machine manufacturers responded by making their machines more modern; they could now run on electricity! Traditionally, sewing machines had been human powered by either a hand crank or a treadle. In Europe, where homes were smaller, and wherever portability was necessary, the hand

crank was popular, but in America, the treadle reigned supreme. With the hand crank, you only had one hand, the left hand, to guide the material because the right hand was required to turn the machine, but the treadle meant your feet were doing all the work of running the machine, so both hands were free to guide and manage the cloth.

Edison started delivering electricity to homes in 1882. By 1889, Singer had adapted a sewing machine to run on electricity but did not start to push the electric sewing machine until about 1920, when a large number of homes had electricity and the company needed a new marketing strategy to sell machines. As late as 1937 Consumers Reports was still recommending that most homes consider a treadle machine to save money over an electric machine as they



A number of sewing machines were built for children. Nearly all toy machines were hand crank. The Little Worker (in back) sewed with a lock stitch and could actually be used as a small portable machine. The Singer design (right) was actually based on the Willcox and Gibbs machine and sewed with a twisted chain stitch. It could also be used to actually sew clothes. The Necchi (left) was used to promote Necchi's larger machines and is only a toy.

were perfectly adequate for most home sewing. Today, treadle machines have made something of a comeback among people who want a green lifestyle.

Choosing a Vintage Machine

Sewing on a vintage machine, whether with a hand crank, a treadle or an electric motor, has several advantages. One is cost. Vintage machines are generally not very expensive to begin with. Although there are some eBay sellers who ask very high prices, it is usually possible to obtain a good vintage machine locally for less than a hundred dollars which is much lower than the cost of a new machine. The difference is that the vintage machine will probably outlast a modern machine, especially the cheap ones, by many years. Vintage machines are made mostly or totally of metal, which means they are quite robust and will usually last a lifetime.

Parts for many vintage machines are still available and should be for many years, while models of many modern machines come and go so quickly that the parts are often harder to find at reasonable prices, if at all, especially if the machine is more than ten years old. Computerized machines sew quite nicely but rely on a number of rather expensive stepper motors. The motors in many of the early computer machines are no longer available, meaning they cannot be repaired unless parts are salvaged from another machine.

The drawback of vintage machines is that they do not have the bells and whistles

of the modern machines. They only sew straight and sometimes zigzag seams. However, most sewers learn the basics of their machines and seldom, if ever, use all the fancier stitches. With a vintage machine, you can learn the basics and you can generally keep the machine long enough that everything becomes second nature rather than having to learn a new machine every few years. Even buttonholes are not a problem, because with the purchase of a buttonholer, a vintage machine can even do a nicer job than most modern machines.

Vintage machines can generally be separated into two groups: straight stitch only and zigzag machines. The following are some personal recommendations for both types of machines.

Straight Stitch Machines

Because of the availability of parts, I generally recommend only Singer straight stitch machines manufactured between about 1900 and 1960.

Singer Model 15

The more modern Singer Model 15 with reverse (this also includes the Japanese HA-1 machines, which are a near copy.) Many people prefer the Model 15-91 with a built-in gear-drive motor; however, I prefer the Models 15-90 or 15-88 or the Japanese machines because they are more versatile. They can be run by either electricity, a treadle, or a hand crank. The Model 15 is the most robust of the vintage machines and can

easily sew light fabric or, when necessary, very heavy fabric. (All metal.)

Singer Model 201

In the U.S., these machines are almost always found with a built-in gear drive motor. These are very smooth machines. They work great on most fabrics but may not be quite as good as the Model 15 on very heavy fabrics. (All metal.)

Singer Featherweight Model 221/301

Both of these machines are quite portable and sew a very nice stitch. They are probably not best for very heavy material. The Featherweight can be rather expensive, but the 301, like the 201 and 15 above, can generally be had for less than a hundred dollars. (All metal.)



The Elna Supermatic from Switzerland was introduced in the early 1950s. It could not only do straight and zig-zag stitches but a large number of decorative stitches by the insertion of various special cams.

Zigzag Machines

Some of these machines have a few nylon parts, but the parts are available, so the machines are still worth repairing. Most were manufactured between the end of World War II and about 1980.

Elna Supermatic, Star/Air Electronic

These machines were made in Switzerland and are very high quality. They were some of the finest machines of their time. To make a variety of fancy stitches, most relied on cams. The same cams work for all machines. The machines are very smooth, but if they have been left unused for some time, their interior friction rubber drive pulley can develop a flat spot and will be quite loud unless replaced. It is probably worth the cost of replacing the pulley if the rest of the machine is in good condition. (Some nylon parts.)



The Elna Stella was also made by Elna in Switzerland. It was a continuation of an earlier Elna machine called the Lotus. Both machines had a built-in case that would fold down and open out like a Lotus flower and had all the accessories under a hinged lid at the top of the machine.



The Bernina machines, like the Elnas, were made in Switzerland to a very high standard of quality. The Bernina 800 series from the 1970s have a near cult-like following and often fetch \$300 to \$600 dollars on the used market.

Elna also produced two very nice small machines through the seventies and early eighties. The first was the Lotus, which had a built-in case which folded out in use, hence the name Lotus. The second machine was the successor to the Lotus, called the Elnita Stella, which was very much like the Lotus but ran on an air-controlled foot. Note: these recommendations only apply to the Swiss-made Elna machines. (Some nylon parts.)

Bernina

Like the Elnas, these machines were also made in Switzerland and are of very high quality. The Bernina zigzag machines are extremely nice. Through the sixties and seventies Bernina and Elna made some of the finest machines. The 800 Series by Bernina has almost a cult following, however, which can make them quite expensive. (Some nylon parts.)

Necchi BU through Supernova

These machines were made in Italy. These are very fine but do need to be kept well-lubricated, especially the needle bar and the zigzag mechanism. (All metal.) The later Italian Necchi machines were nice machines and very stylish, but their nylon parts are starting to deteriorate and are no longer available, so are not recommended.

Singer 400 and 500 Series

These were some of the last great Singers. A good friend who is a professional seamstress uses a Singer 411 with a treadle exclusively. Both use identical cams for decorative stitches. One other Singer which can often be had quite inexpensively is the Model 237. It was made in Italy and does a



The Singer 400 and 500 series machines were the last of the great Singer machines. They were produced in the U.S. in the late 50s and early 60s. They were very sturdy all-metal machines. Although many experts consider the Model 201 to be Singer's finest, when introduced Singer claimed the Model 401 to be "the finest sewing machine ever produced." Although it had a few built-in stitches, it also borrowed the idea of insertable cams for additional decorative stitches from Elna.



The Italian made Necchi BU was the first home zig-zag sewing machine. Other foreign manufactures soon followed suit. Singer was slow to adapt. It was introduced just after World War II in the late 1940s

great job on straight and zigzag stitches. (All metal.)

References

Here are a few web sites you might find very interesting if you would like to learn more about vintage sewing machines.

- <http://www.sewalot.com/>
- <http://blog.sew-classic.com/>
- <http://singermemories.com/>
- <http://sewing-machines.blogspot.com/>

Courtney Willis and his daughter have entertained themselves at cons by entering costume masquerades and putting on science demonstrations while his wife tended to "serious business" (aka writing award-winning stories). Dr. Willis taught high school science for 23 years and has been a Professor of Physics at the University of Northern Colorado for 22 years. He enjoys collecting slide rules and vintage sewing machines, and fiddling with old stereo equipment.