Concise History of Electric Irons in the United States

Ironing and Irons, Before Electricity

Irons are tools. They remove wrinkles, giving the fabric a smooth and satisfying finish. In some parts of the world, ironing still serves another purpose—sanitation. The heat of an iron kills parasites and bacteria which can cause harmful effects on health.

The desire for smoothly finished fabric is old. In Asian cultures, there is evidence of irons in use circa 800 A.D., and it is likely that ironing stretches back much further. In European cultures the evidence goes back just as far; people used smooth stones and pieces of glass with a flat surface or even the jaw of a cow or tooth of a pig to press out the wrinkles.

Before the effectiveness of heat for ironing was realized, pressure was the sole acting force. In northern Europe in the 1500s, a mangle board became a popular tool for flattening cloth. A mangle board, a piece of wood that had one or two handles, would be pressed down and rolled along a thin, wooden cylinder that had been wrapped with a damp article of clothing. (Imagine rolling dough, but the dough is unyielding.) After sufficient rolling, the article would be removed from the cylinder and laid flat to dry.

By the 1600s, heat was being used in the ironing process. Heating the fibers of a fabric allows them to regain their plasticity, and the application of pressure forces them back to being straight instead of kinked and wrinkled.

The European irons of the 1600s and the 1700s were most often box or "slug" irons. They were constructed of thin slabs of metal that formed a pointed box with a rectangular opening at the rear. A solid slug of metal, which had been heated in a fire, was placed inside the box to heat the iron, resulting in stultifying heat for the person using the iron.

Until the Industrial Revolution of the 1800s, wearing ironed clothes was not a privilege of the poor. Irons were very expensive objects and only wealthier families, who employed servants to iron their clothes, could afford them. After the production of cast iron was perfected in the 1800s, a simple ironing implement could be cheaply made. Only then did the iron become a consumer good.

One pre-electric era patent helped change the landscape of the market for irons. The patent, awarded to Mary Potts of Ottumwa, Iowa, in 1871, was for a detachable handle that could be removed while the base was heated and reattached when the base was hot enough for use. Before Potts' invention, the common and affordable household iron was a flat or "sad" iron (with *sad* meaning *dense* or *heavy*). The flat iron's handle was affixed to a small block of iron. The heat of the block was readily transmitted to the handle, making it extremely uncomfortable to use. Potts' patent for a detachable handle that stayed cool was immediately imitated by the entire industry, resulting in mass production that allowed the working class to afford an iron that greatly diminished the discomfort of ironing.

Now that irons were more affordable, for the first time there was an expectation by the masses that they could and should wear well-pressed clothing. This notion would sustain a demand for better and better ironing technology that persisted for more than 100 years. The result? Today's irons are lightweight; and they automatically and precisely govern temperature, vary steam output, don't stick to the item being ironed, and automatically shut off if left unattended or tipped over.

Irons in the Early Years of Electricity

The first U.S. patent for an electric iron was filed on December 8, 1881, by Henry W. Seely of New York City. The patent was awarded to him on June 6, 1882. Oswald Rose of Manchester, England, had been awarded an English patent for an electric iron just six days earlier, on May 31, 1882. French and German patents were awarded about this same time. No example of Seely's iron has survived, and it remains in doubt if any were produced for the market.

In 1890, Charles E. Carpenter of Minneapolis, Minnesota, produced electric irons for use in a clothing factory—a milestone reported in the August 30, 1890, issue of *Scientific American*. (The full history of Carpenter and his company is detailed in the **Early Electric Irons** section of this book.) Carpenter produced irons for just a few years, seemingly no later than 1894, when he dissolved the second of two companies he formed to produce irons. The industry spent the next 30 years developing and perfecting the technology needed to produce a reliable, durable and safe electric iron.

Many early electrics looked no different than a typical flat iron with two prongs added as an attachment point for the wires. The handles continued to be made of wood, supported by steel uprights. At least two companies, Landers Frary & Clark and Cutler-Hammer, made electric irons with a detachable handle, an impractical vestige of Mary Potts' improvement.

The earliest technical hurdle involved making a heating element that would last. Henry Seely's 1882 patent used carbon sticks, which must have been quite fragile, to conduct electricity and generate heat. Seely's next patent, in 1883, switched from carbon sticks to compressed carbon powder and put the heating element in a stand that the iron sat upon until heated sufficiently. Under this second design, the iron's heating element would not be subject to movement and physical shock, which tended to ruin it. In an 1890 patent, Charles Carpenter claimed that he had solved this problem by incorporating a steel plate into the iron. The plate applied mechanical pressure to the heating element; the pressure increased as the temperature increased.

It wasn't long before metal wire replaced the carbon as the heating element. The metal wire had the characteristic of electrical resistance: resistance to flow of electricity converts some of the electrical energy into heat. Earl Lifshey's *The Housewares Story* describes this development by quoting Robert Kuhn, the son of Frank Kuhn who founded an electric heating company circa 1894:

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"The biggest problem was getting resistance wire for the heating elements. The only source was Germany, yet even this material was not a true wire but rather a sintered material of resistance alloys in wire form. It had little tensile strength when cold and was extremely difficult to form on the windings of an element; and when it was heated it just fell apart at the strain points. Attempts to sandwich and clamp the wire with insulation led to early patents, but little true reliability."

It took many years of invention and testing to make truly durable heating elements. Until then, the manufacturers made the best of it by designing irons that simplified the process of replacing the heating element and by selling their irons on that basis. In 1908, the Electric Heating & Mfg. Co. of Los Angeles advertised "in case of a burn-out, too, this feature is indispensable. A screwdriver is the only tool needed and it's a two-minute job" (see this iron on page 177).

Solving the durability issue was significantly advanced by Thomas E. Morford, an acquaintance of Carpenter. Morford had an idea: to encase the resistance wires in enamel, which would prevent moisture from degrading the wire. In July 1890, Morford showed a picture of his idea to Carpenter. Weeks later, Carpenter filed for a patent of the idea and was awarded one in February 1891. Morford successfully challenged the wrongful award, and the patent was reassigned to Morford in 1893.

The earliest electric irons from 1890 to 1915 reveal their provenance by one or more of these characteristics:

- Wiring lacks a simple way to disconnect from the iron.
- The two separate strands of cloth-covered wire are twisted together.
- Body of iron is in two parts, with lower and upper parts separated by a layer of asbestos.
- Wood handle is a complex turning with grooves or other decorative touches.
- Instead of a standard two-prong plug, there is a light socket adapter for some other nonstandard plug, such as one made of wood. These light socket adapters are sometimes seen on irons made after 1915.

The first use of electricity in a residential setting was for lighting and, typically, the only outlet for electricity would be a light bulb socket hanging from the ceiling (wall receptacles came much later). Thus the first irons were equipped with light socket adapters. Since the electric light bulb had to be removed from the socket in order to connect the iron, ironing had to be done during the day, when natural lighting was available. This presented a definite problem: The early power companies did not supply electricity to residences during the day, because electric lighting was not in demand during daylight hours. And they reacted with disinterest when it was first proposed. It wasn't until about 1910 that the power companies realized they could increase revenue by providing electricity during the day. This was a turning point for the manufacturers of electric home appliances.