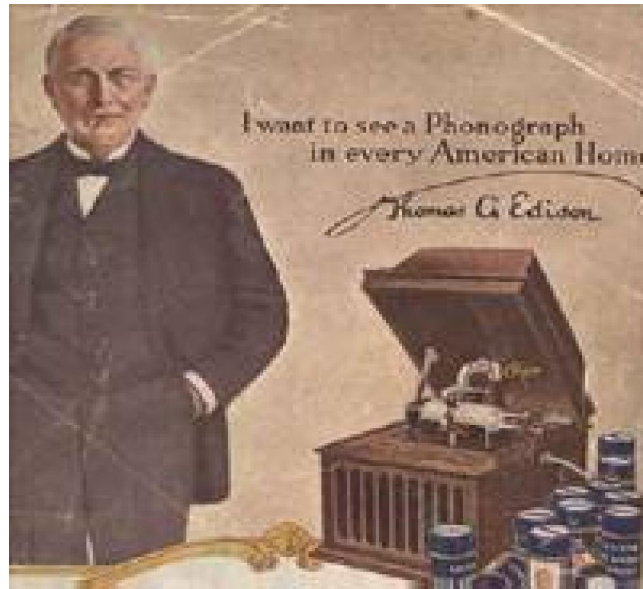


The Inventions of Thomas Edison



The first great invention developed by Edison in Menlo Park was the tin foil phonograph. While working to improve the efficiency of a telegraph transmitter, he noted that the tape of the machine gave off a noise resembling spoken words when played at a high speed. This caused him to wonder if he could record a telephone message. He began experimenting with the diaphragm of a telephone receiver by attaching a needle to it. He reasoned that the needle could prick paper tape to record a message. His experiments led him to try a stylus on a tinfoil cylinder, which, to his great surprise, played back the short message he recorded, "Mary had a little lamb."

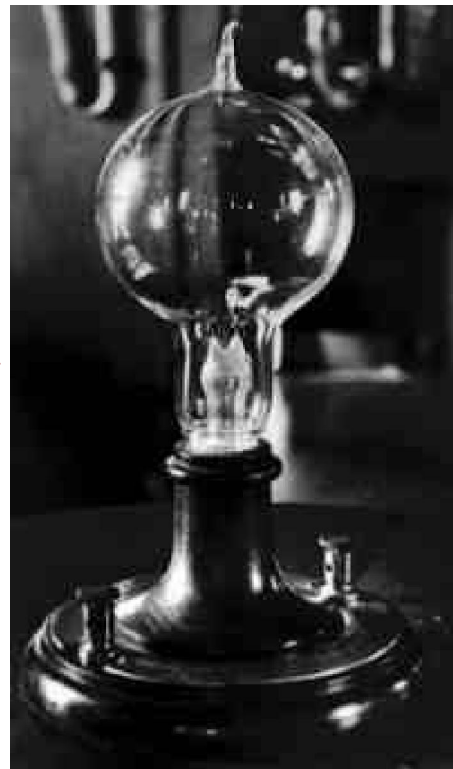
The word phonograph was the trade name for Edison's device, which played cylinders rather than discs. The machine had two needles: one for recording and one for playback. When you spoke into the mouthpiece, the sound vibrations of your voice would be indented onto the cylinder by the recording needle. This cylinder phonograph was the first machine that could record and reproduce sound created a sensation and brought Edison international fame.

August 12, 1877, is the date popularly given for Edison's completion of the model for the first phonograph. It is more likely, however, that work on the model was not finished until November or December of that year, since he did not file for the patent until December 24, 1877. He toured the country with the tin foil phonograph, and was invited to the White House to demonstrate it to President Rutherford B. Hayes in April 1878.

In 1878, Thomas Edison established the Edison Speaking Phonograph Company to sell the new machine. He suggested other uses for the phonograph, such as: letter writing and dictation, phonographic books for blind people, a family record (recording family members in their own voices), music boxes and toys, clocks that announce the time, and a connection with the telephone so communications could be recorded.

Electricity and Lightbulb - History

Thomas Edison's greatest challenge was the development of a practical incandescent, electric light. Contrary to popular belief, he didn't "invent" the lightbulb, but rather he improved upon a 50-year-old idea. In 1879, using lower current electricity, a small carbonized filament, and an improved vacuum inside the globe, he was able to produce a reliable, long-lasting source of light. The idea of electric lighting was not new, and a number of people had worked on, and even developed forms of electric lighting.



But up to that time, nothing had been developed that was remotely practical for home use. Edison's eventual achievement was inventing not just an incandescent electric light, but also an electric lighting system that contained all the elements necessary to make the incandescent light practical, safe, and economical.

After one and a half years of work, success was achieved when an incandescent lamp with a filament of carbonized sewing thread burned for thirteen and a half hours.

There are a couple of other interesting things about the invention of the light bulb: While most of the attention was on the discovery of the right kind of filament that would work, Edison actually had to invent a total of seven system elements that were critical to the practical application of electric lights as an alternative to the gas lights that were prevalent in that day.

These were the development of:

1. the parallel circuit,
2. a durable light bulb,
3. an improved dynamo,
4. the underground conductor network,
5. the devices for maintaining constant voltage,
6. safety fuses and insulating materials, and
7. light sockets with on-off switches.

Before Edison could make his millions, every one of these elements had to be invented and then, through careful trial and error, developed into practical, reproducible components. The first public demonstration of the Thomas Edison's incandescent lighting system was in December 1879, when the Menlo Park laboratory complex was electrically lighted. Edison spent the next several years creating the electric industry.

The modern electric utility industry began in the 1880s. It evolved from gas and electric carbon-arc commercial and street lighting systems. On September 4, 1882, the first commercial power station, located on Pearl Street in lower Manhattan, went into operation providing light and electricity power to customers in a one square mile area; the electric age had begun.

Thomas Edison's Pearl Street electricity generating station introduced four key elements of a modern electric utility system. It featured reliable central generation, efficient distribution, a successful end use (in 1882, the light bulb), and a competitive price. A model of efficiency for its time, Pearl Street used one-third the fuel of its predecessors, burning about 10 pounds of coal per kilowatt hour, a "heat rate" equivalent of about 138,000 Btu per kilowatt hour.

Initially the Pearl Street utility served 59 customers for about 24 cents per kilowatt hour. In the late 1880s, power demand for electric motors brought the industry from mainly nighttime lighting to 24-hour service and dramatically raised electricity demand for transportation and industry needs. By the end of the 1880s, small central stations dotted many U.S. cities; each was limited to a few blocks area because of transmission inefficiencies of direct current (dc).

The success of his electric light brought Thomas Edison to new heights of fame and wealth, as electricity spread around the world. His various electric companies continued to grow until in 1889 they were brought together to form Edison General Electric. Despite the use of Edison in the company title however, he never controlled this company. The tremendous amount of capital needed to develop the incandescent lighting industry had necessitated the involvement of investment bankers such as J.P. Morgan. When Edison General Electric merged with its leading competitor Thompson-Houston in 1892, Edison was dropped from the name,

and the company became simply General Electric.

Edison Motion Pictures – History



Thomas Edison's interest in motion pictures began before 1888, however, the visit of Eadweard Muybridge to his laboratory in West Orange in February of that year certainly stimulated his resolve to invent a camera for motion pictures. Muybridge proposed that they collaborate and combine the Zoopraxiscope with the Edison phonograph. Although apparently intrigued, Edison decided not to participate in such a partnership, perhaps realizing that the Zoopraxiscope was not a very practical or efficient way of recording motion. In an attempt to protect his future, he filed a caveat with the Patents Office on October 17, 1888, describing his ideas for a device which would "do for the eye what the phonograph does for the ear" -- record and reproduce objects in motion. He called it a "Kinetoscope," using the Greek words "kineto" meaning "movement" and "scopos" meaning "to watch."

One of Edison's first motion picture and the first motion picture ever copyrighted showed his employee Fred Ott pretending to sneeze. One problem was that a good film for motion pictures was not available. In 1893, Eastman Kodak began supplying motion picture film stock, making it possible for Edison to step up the production of new motion pictures. He built a motion picture production studio in New Jersey. The studio had a roof that could be opened to let in daylight, and the entire building was constructed so that it could be moved to stay in line with the sun.

C. Francis Jenkins and Thomas Armat invented a film projector called the Vitascope and asked Edison to supply the films and manufacture the projector under his name. Eventually, the Edison Company developed its own projector, known as the Projectoscope, and stopped marketing the Vitascope. The first motion pictures shown in a "movie theater" in America were presented to audiences on April 23, 1896, in New York City.



The Life of Thomas Edison (1847-1931)

The Genius of Menlo Park - Biography

He was a poor student. When a schoolmaster called him "addled," his furious mother took him out of the school and proceeded to teach him at home. Thomas Edison said many years later, "My mother was the making of me. She was so true, so sure of me, and I felt I had some one to live for, some one I must not disappoint." At an early age, he showed a fascination for mechanical things and for chemical experiments.

Biography

Born on February 11, 1847 in Milan, Ohio; the seventh and last child of Samuel and Nancy Edison. When he was seven his family moved to Port Huron, Michigan and Edison lived there until he struck out on his own at the age of sixteen. He had very little formal education as a child, attending school only for a few months. He was taught reading, writing, and arithmetic by his mother, but was always a very curious child and taught himself much by reading on his own. This belief in self-improvement remained throughout his life.