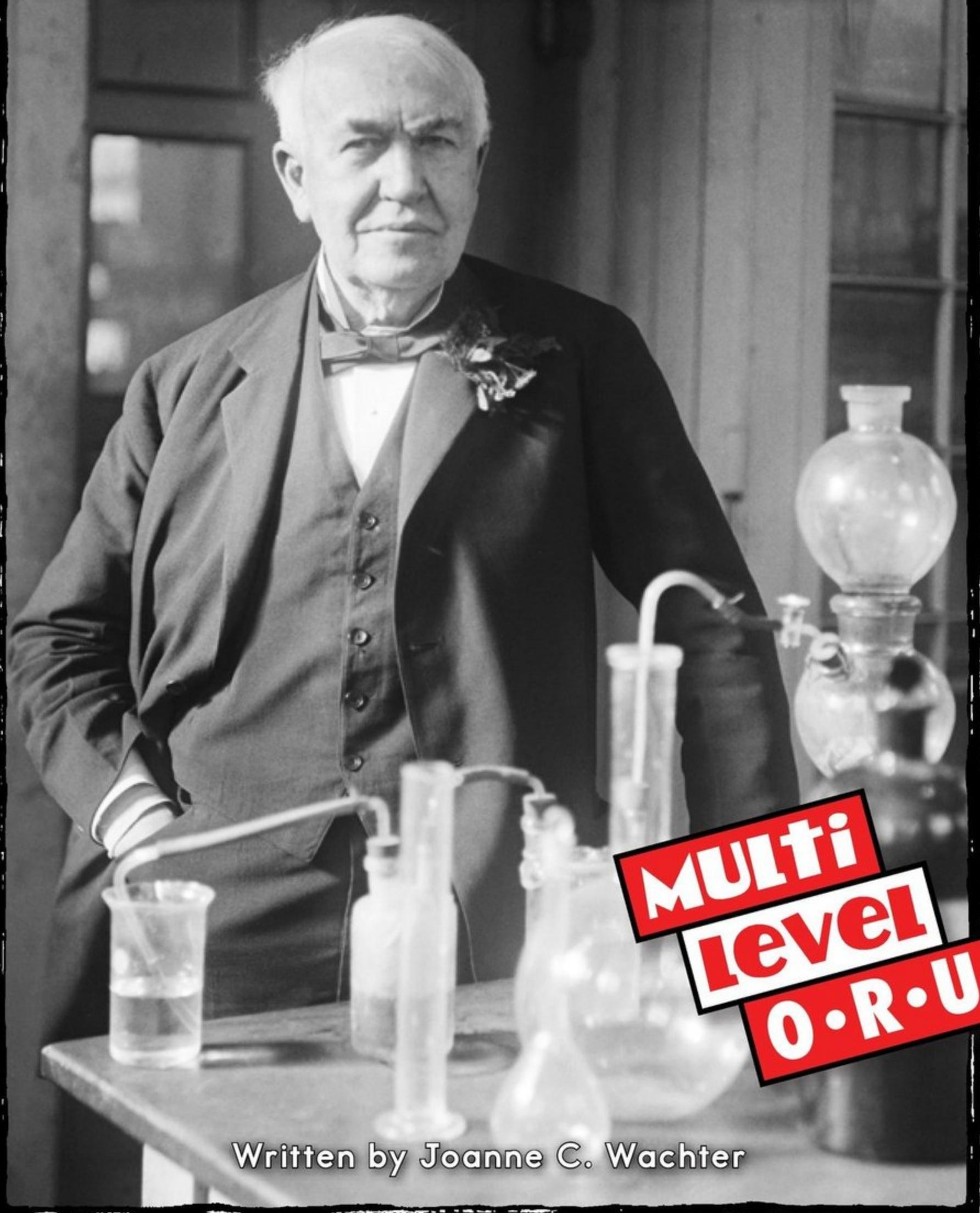


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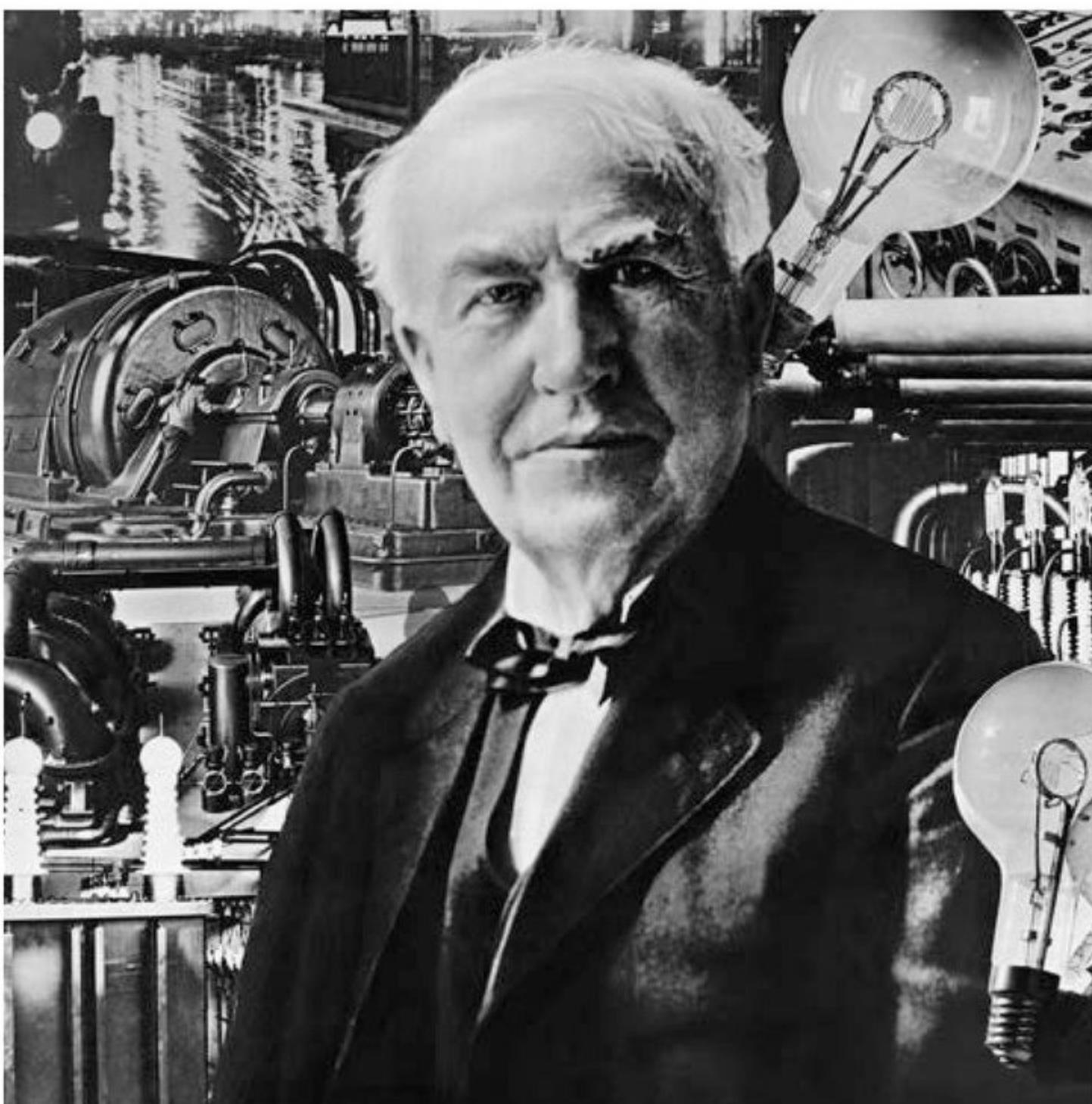
Thomas Edison



MULTI
level
O•R•U

Written by Joanne C. Wachter

Thomas Edison



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Focus Question

What traits describe Thomas Edison, and how did they affect his actions?

Words to Know

capable
experiments
filament
for-profit
invented

operator
patent
practical
sketched

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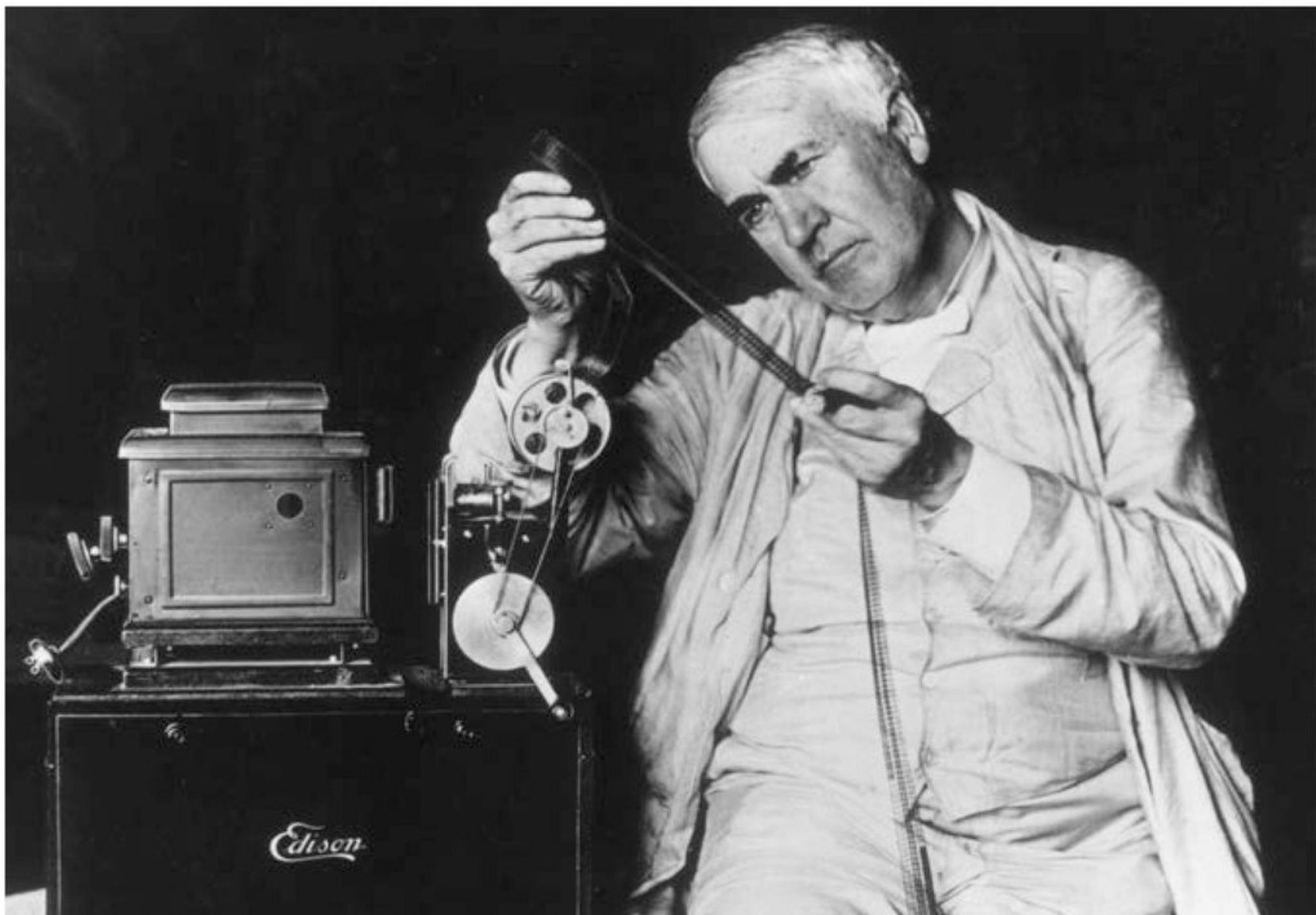
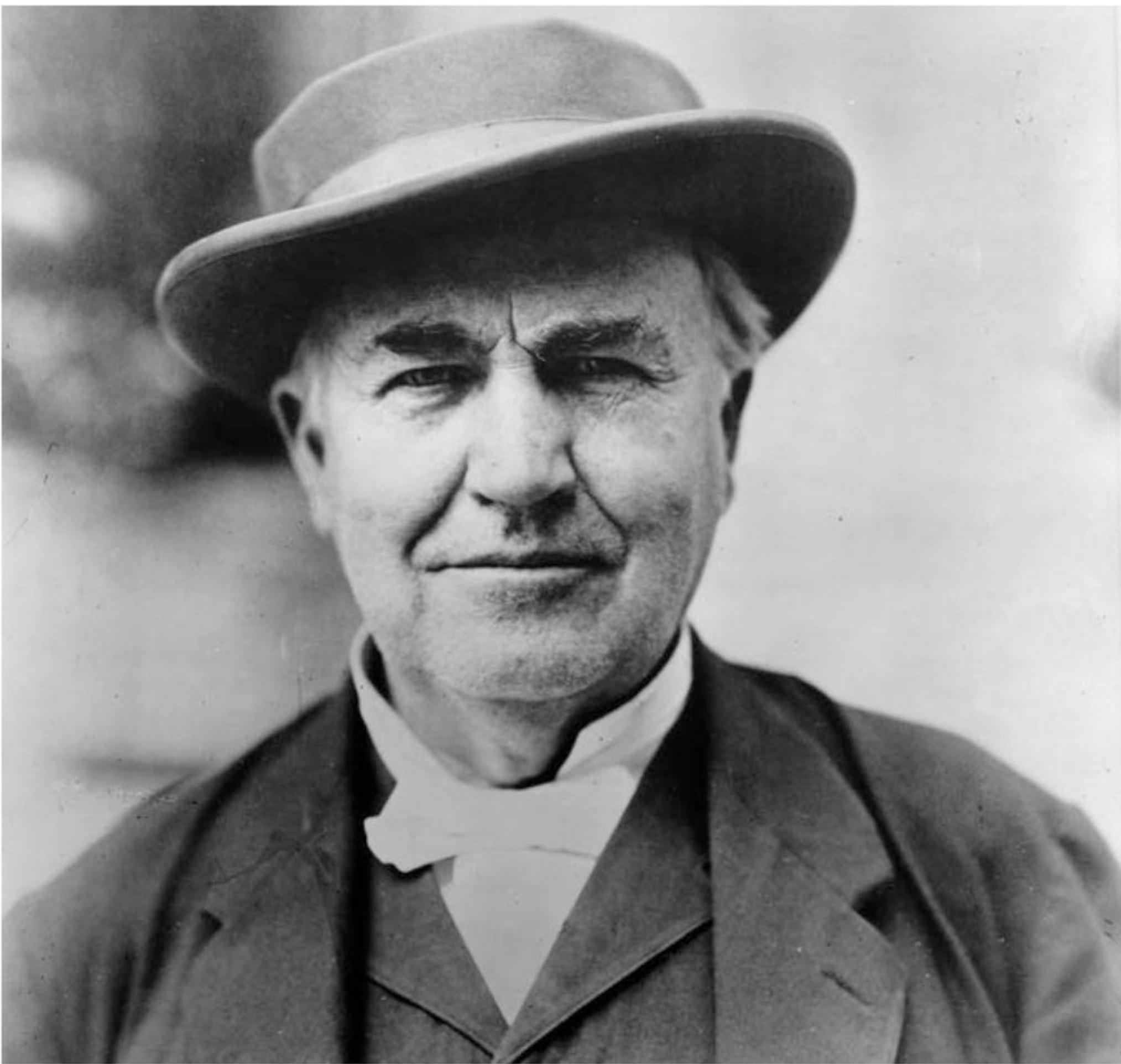


Table of Contents

A Curious Boy	4
Young Al	5
Edison the Inventor	7
A New Lab	8
Important Inventions	10
A Special Project	12
Other Exciting Ideas	14
A Remarkable Man	15
Glossary	16



Thomas Alva Edison in 1914

A Curious Boy

From an early age, Thomas Edison loved to question things. He spent his whole life learning why and how things worked. Once he knew how things worked, he tried to figure out how to make them work better.

Thomas Edison **invented** or improved over a thousand things, some of which we use every day. Many people think of him as one of the greatest American inventors of all time.



Thomas Edison at fourteen years old

Young Al

Thomas Alva Edison was born on February 11, 1847. Al, as he was called as a boy, did not do well in school. In those days, students memorized facts. They didn't explore and ask their own questions, which is what Al loved to do. Al's mother took her son out of school and taught him at home. She taught him to love to read. His father gave Al ten cents for every classic book he read.

Al started to work on the railroad when he was twelve years old. He sold food and newspapers. Al used the money he earned to buy books and science supplies. He set up a lab in a baggage car until an accidental fire ended his **experiments**.

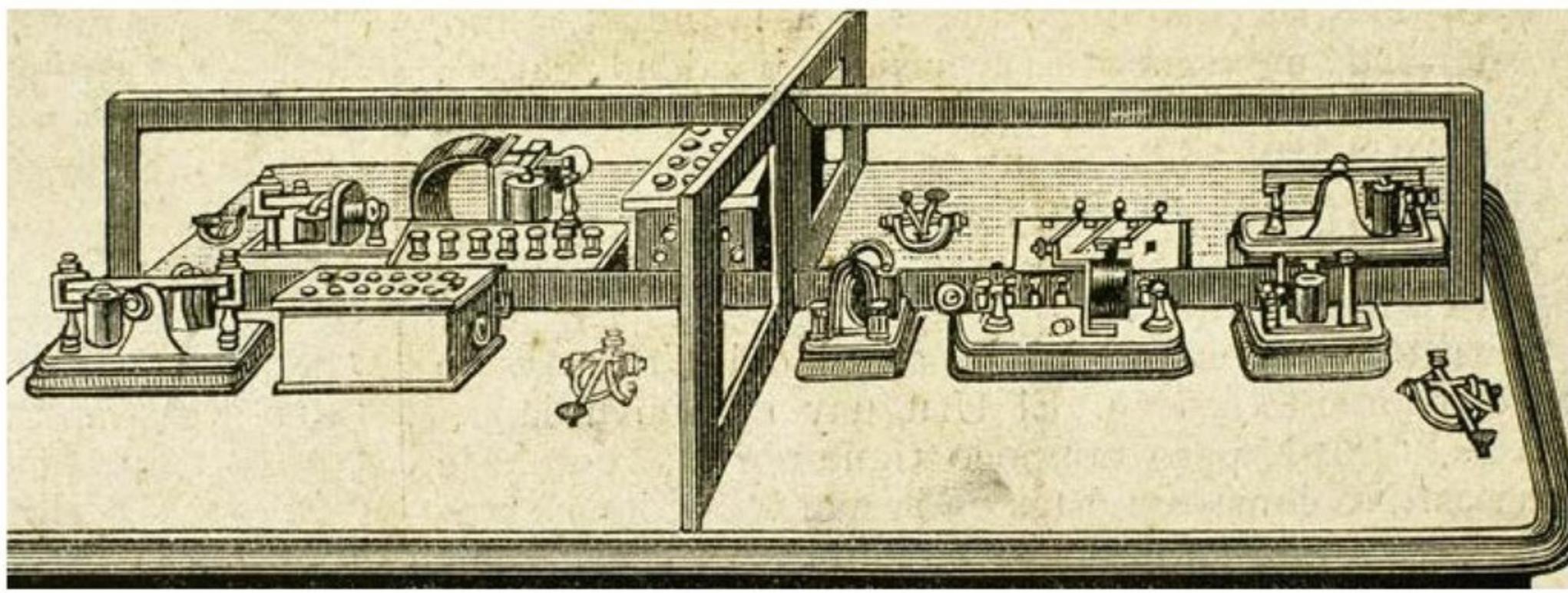
Also around this time, Al lost most of his hearing. As an adult, he would say someone grabbed him by the ears and pulled him onto a train.

When he was fifteen, Al saved a young boy's life. The boy was about to be run over by a boxcar when Al grabbed him. The child's thankful father offered to teach Al how to be a telegraph **operator**.

As Al grew older, he traveled around the country as a telegraph operator. He wanted to be called Tom and continued to be interested in science. He spent much of the money he earned on books and supplies.



A drawing of a train telegraph operator

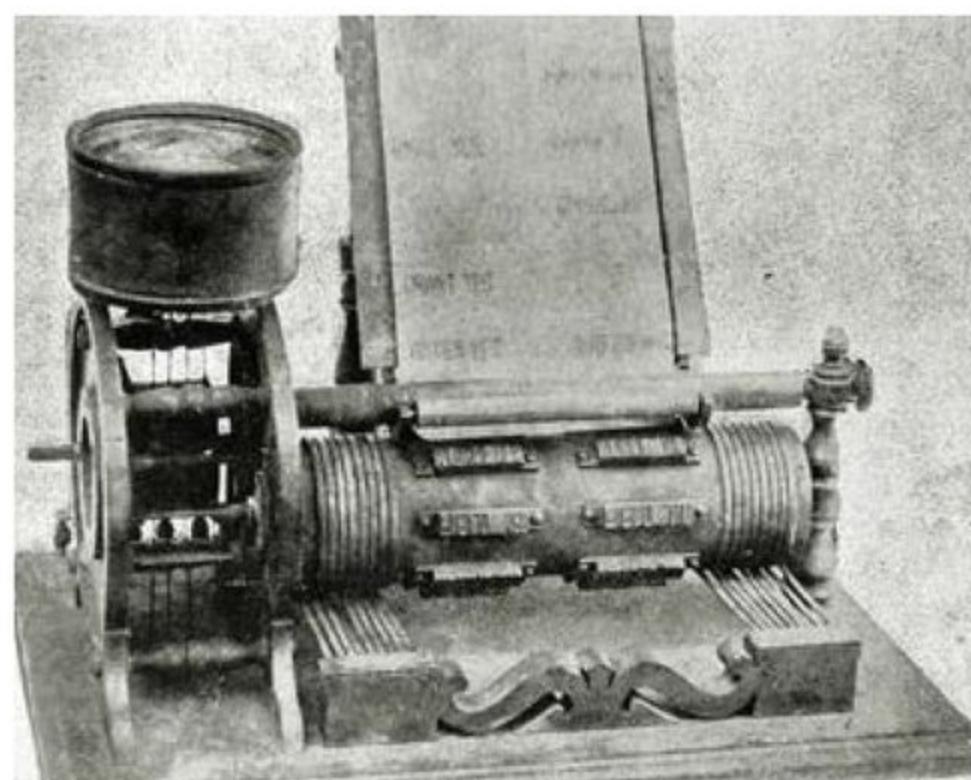


Edison's improved telegraph

Edison the Inventor

After a few years, Edison decided to become a full-time inventor. Some of his early inventions were improvements on the telegraph. For example, he found a way to send two messages and receive two messages at the same time. Earlier telegraphs could only send or receive one.

Edison received his first **patent**, for an electric vote counter, in 1869. The invention did not do well. Edison continued to invent. He said he would not give up, no matter what happened.



Edison's electric voting machine

Do You Know?

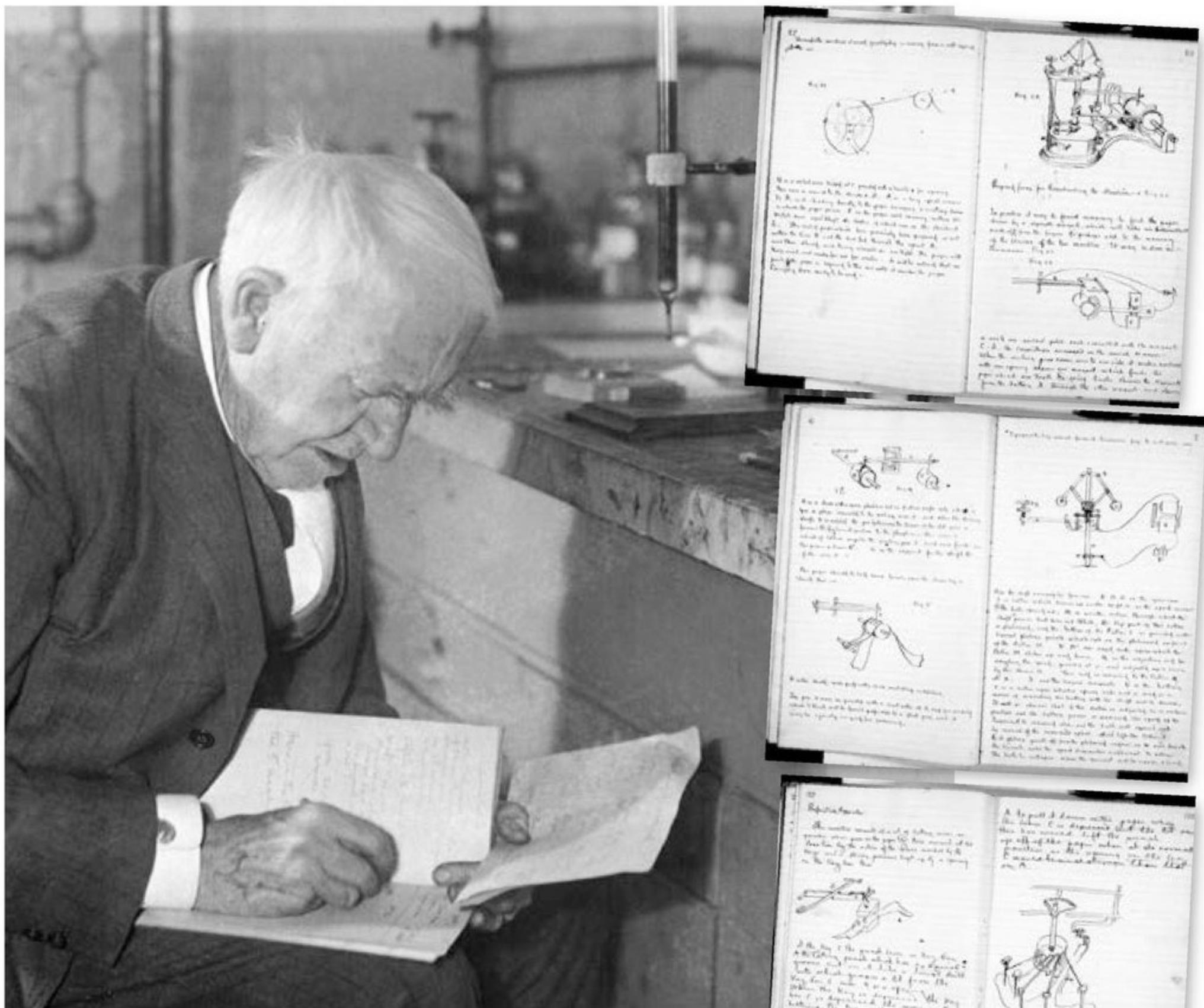
The telegraph let people communicate before the invention of the telephone. It used a code of dots and dashes, or short and long beeps, to form letters.



Edison at work in his Menlo Park lab (top) and the outside of the lab (bottom)

A New Lab

Edison found partners and began to build and sell some of his inventions. In 1876, he built a lab in Menlo Park, New Jersey. It was the first **for-profit** research lab in the world. People called it the “invention factory.” There, Edison worked for many hours each day, and many of his workers stayed with him just as long.



Edison writing in a notebook (main) and some pages from his notebooks (right)

Edison sketched his ideas in notebooks. He gave the sketches to his workers, who then created the inventions. Edison filled 3,500 notebooks with ideas for inventions. Not all of those ideas worked. Edison continued to work. He said he needed to find out all the ways something didn't work to find out the way it did.



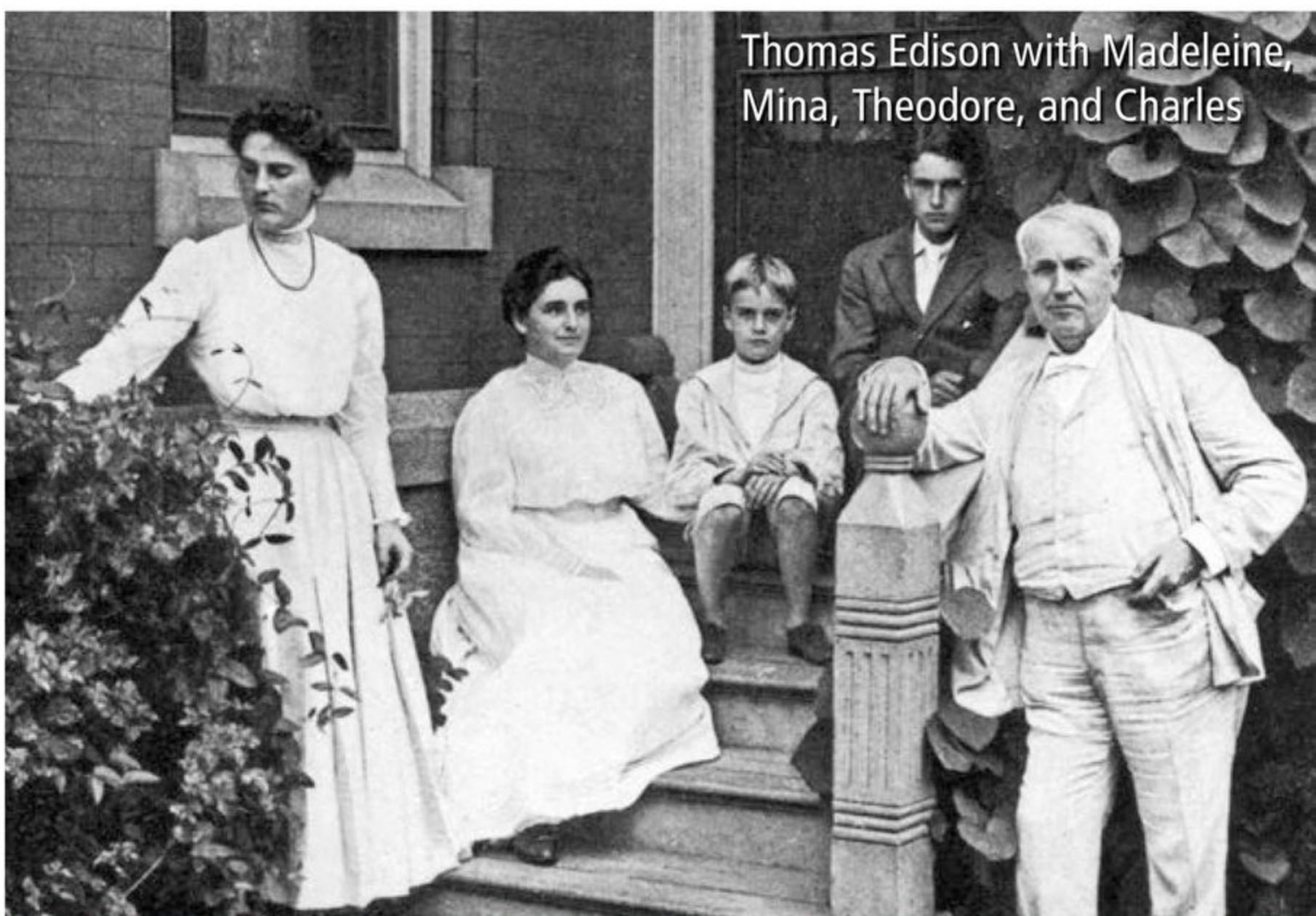
Important Inventions

The telephone was invented in 1876, but it didn't work well. People had to yell into the phone to make themselves heard.

The farther away the telephones were, the worse it was. In 1877, Edison and his team developed a way to make a caller's voice louder and clearer, even over long distances.



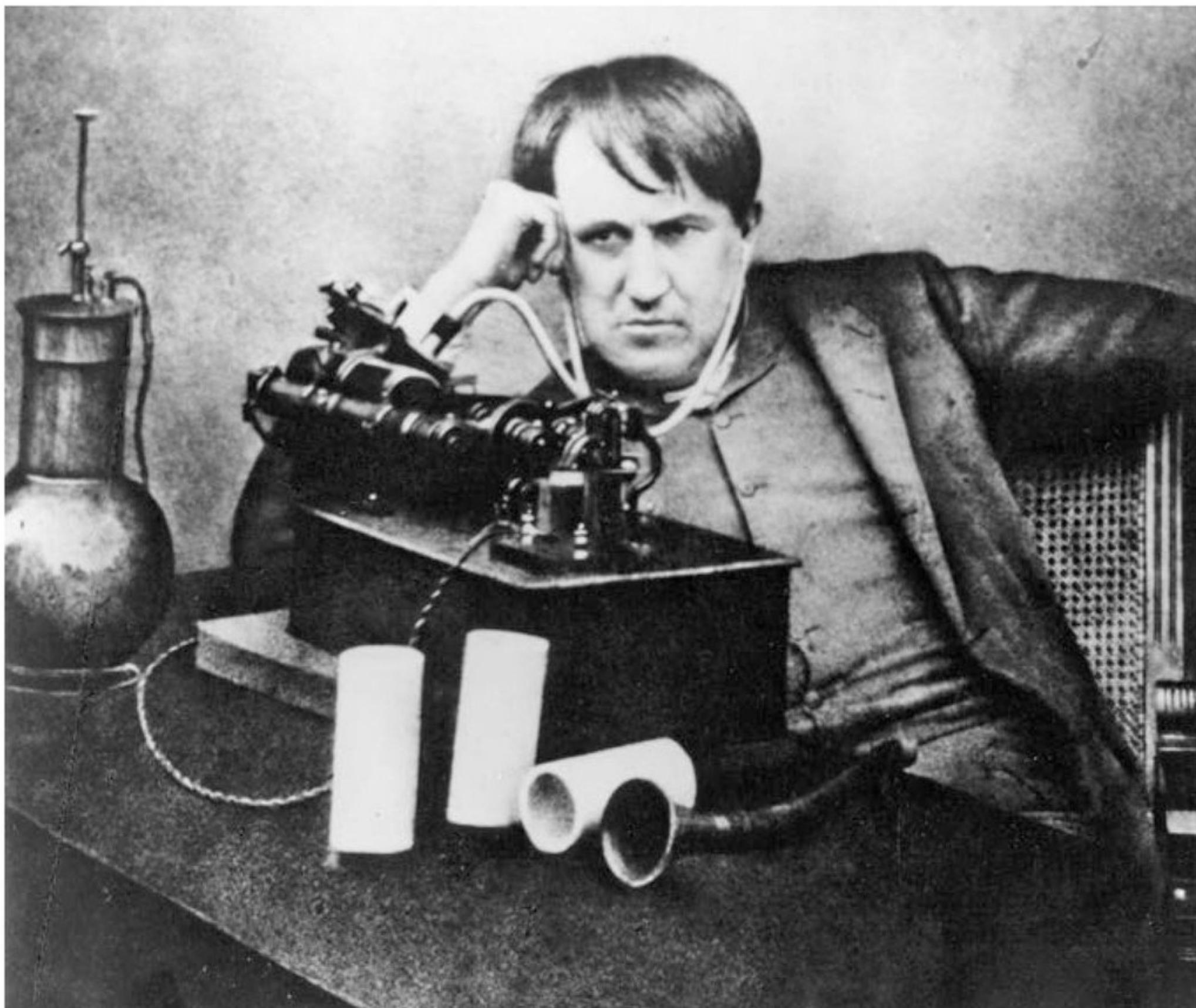
A telephone from 1877 with Edison's improvements



Thomas Edison with Madeleine, Mina, Theodore, and Charles

Edison's Family

Edison married Mary Stilwell in 1871. They had three children—Marion, Thomas Jr., and William. Mary died in 1884. Edison married his second wife, Mina Miller, in 1886. They had three children—Madeleine, Charles, and Theodore.



Edison working on an early version of the phonograph

Edison also wanted to find a way to record words and play them back. He invented a machine called the *phonograph*. The first thing Edison recorded was “Mary Had a Little Lamb.” Some didn’t believe the machine worked. They thought someone was talking in another room!

The phonograph was quite exciting to people in the 1800s. Edison became famous, but he could not figure out what to do with his invention. All his experiments failed. Years later, after many improvements, the phonograph became popular as a way to record and listen to music.

A Special Project

For many years, people had tried to find a **practical** way to use electricity to make light. Many inventors created light bulbs. The bulbs either burned too brightly or dimly, or burned out too fast. In 1878, Edison decided to solve this problem.

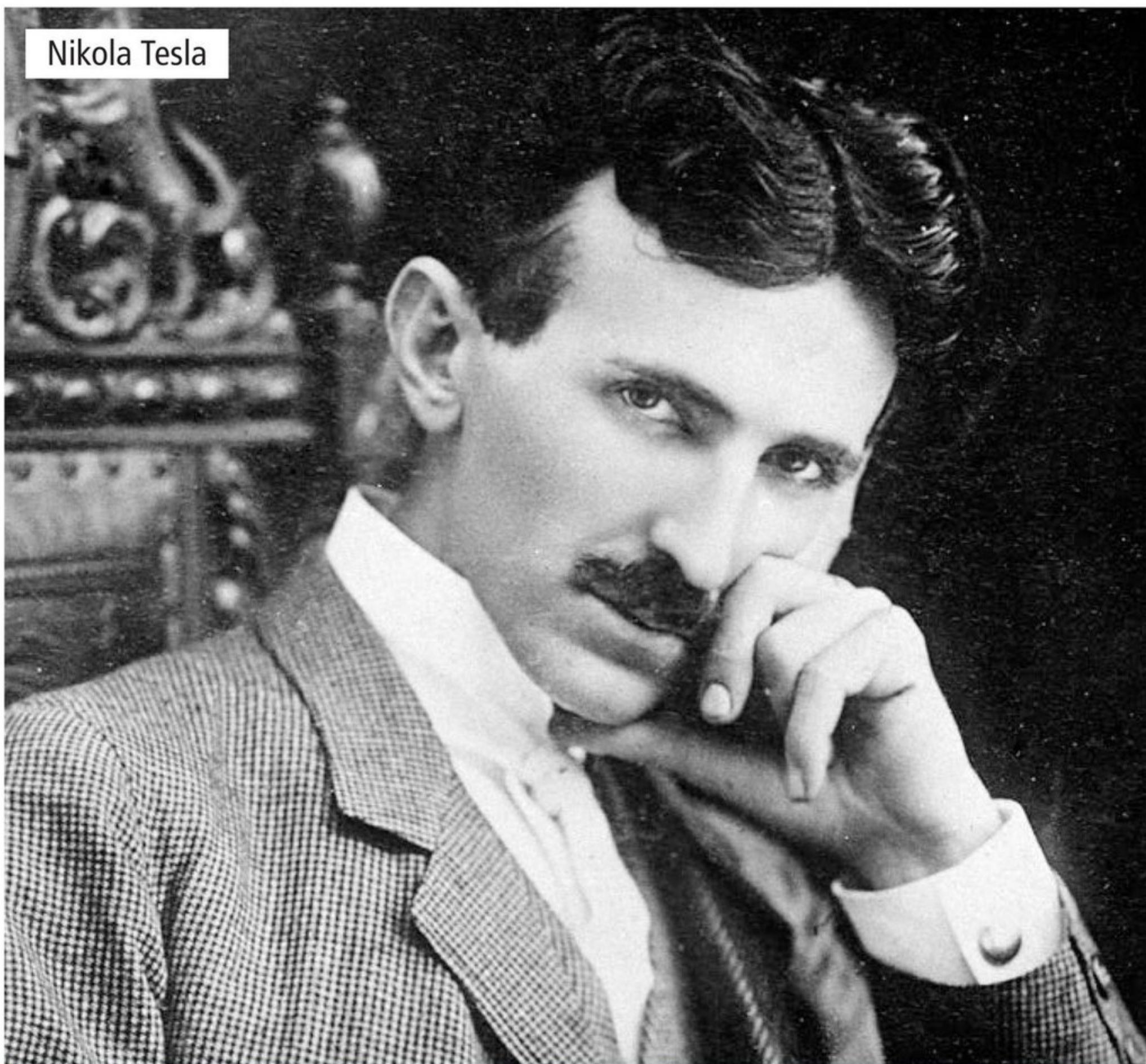
Edison and his team worked around the clock. They had to find a material for the **filament**—the part of a light bulb that glows. They tried thousands of materials until they found one that worked. Edison opened the lab to visitors. People were amazed when they saw the lab brightly lit with electric lights.



One of Edison's first electric light bulbs

Edison's team then had to create an electrical system that could light a building and even a city. In 1881, Edison moved to New York City to help start the first electric power plant. In time, many places replaced gas or oil lamps with electric bulbs.

Nikola Tesla



The War of the Currents

In the 1880s and 1890s, Edison was involved in a competition with another electric company. Edison's method of delivering electricity was called *direct current*, or DC. The other company said the method called *alternating current*, or AC, was better. AC was invented by Nikola Tesla. AC eventually became more popular.

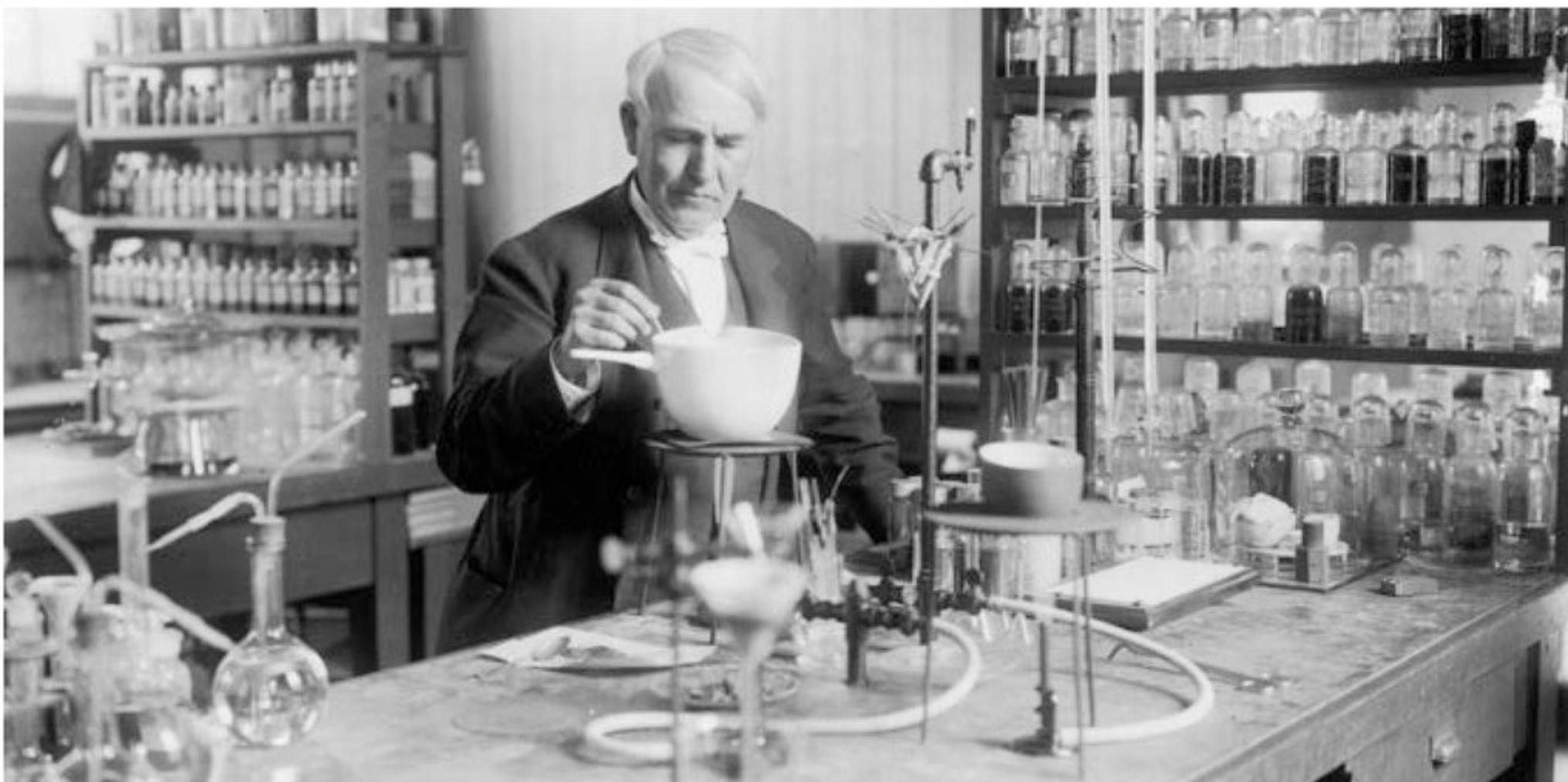


The Kinetograph (left) and Kinetoscope (right)

Other Exciting Ideas

In 1887, Edison moved into a larger lab in West Orange, New Jersey. Around that time, he was shown a machine that quickly played many still images one after another. The things in the images looked as if they were moving!

Edison asked one of his workers, William Dickson, to work on two machines. One machine would record the images, and the other would show them. Dickson and Edison invented the Kinetograph, a motion picture camera. They also invented the Kinetoscope. This projector allowed one person to watch the movie through a small hole. Edison tried to link sound with the images of this new invention. He found it too hard to get the sound and pictures to match, so his films were silent.



Edison conducting an experiment in 1910

A Remarkable Man

Edison continued to put ideas into his notebooks and work with his team to build his inventions. Some of his other inventions included machines for mining, improved batteries, and new uses for cement.

During his life, Edison had 1,093 patents, which was a record at the time. He worked until he was more than eighty years old.

Thomas Edison died on October 18, 1931. President Herbert Hoover asked people to turn out their lights for a short time. He asked them to think about the great changes Thomas Edison had made in their lives.

As Edison once said, “If we did all the things we are **capable** of doing, we would astound ourselves.”

Glossary

capable (<i>adj.</i>)	having the qualities, skills, or abilities to do something (p. 15)
experiments (<i>n.</i>)	scientific tests (p. 6)
filament (<i>n.</i>)	a thread or threadlike object that conducts electricity, such as that found in a light bulb (p. 12)
for-profit (<i>adj.</i>)	set up or done to make money (p. 8)
invented (<i>v.</i>)	created, designed, or built something that did not exist before (p. 4)
operator (<i>n.</i>)	a person who controls a machine or other equipment (p. 6)
patent (<i>n.</i>)	a document granting the right to make money from an invention (p. 7)
practical (<i>adj.</i>)	sensible; realistic (p. 12)
sketched (<i>v.</i>)	made a rough drawing or outline of something (p. 9)

Thomas Edison

A *Reading A-Z Level R Leveled Book*

Word Count: 1,018

Connections

Writing

Research to learn more about one of Thomas Edison's inventions. Create a brochure about the invention to share with your classmates.

Social Studies

Make a timeline of Thomas Edison's life. Include at least five of his inventions on your timeline.



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