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The first electric kettles were sold by the Carpenter Manufacturing Company of Minnesota in 1894. These early kettles had the heating coils placed outside of the kettle, which wasted about one-third of the heat. This problem was solved by Arthur Leslie Large of Birmingham, England, who made a kettle with the coil on the inside in 1922.

The modern safety and position system for car steering was patented as early as 1846 by George Lankensperger, a carriage builder from Munich, Germany. The system was first incorporated into gasoline-powered cars in the 1890s by the German car maker Karl Benz.

The French inventor Gustave Liebau took out a patent for "protector devices for use in motor cars and other vehicles" in 1903. The patent described the first car seat belts. Still, it was some 60 years before car makers fitted seat belts into their mass-produced cars.

Hans Lippershey was born in Germany in 1570, but moved to Middelburg, Holland, where he became an apprentice to a spectacle maker. In 1608, during an idle hour in his workshop, Lippershey was amazed to find that when he held two lenses a certain distance apart, far-away objects appeared very close. He proceeded to build and patent the first telescope, which he called a "kijker" (a viewer). It consisted of a tube containing one fixed lens and a movable eye lens. The Dutch government, seeing the military value of the instrument, paid Lippershey 500 florins for his invention and tried to keep it secret. They failed. By 1609, you could buy a telescope in almost all of the capital cities in Europe. When Galileo heard about the invention he built his own telescope to study the heavens.

Theodore Maiman
George Manby
Gugliemo Marconi
Warren Marrison
Wilhelm Maybach
Mesopotamians
Montgolfier Brothers
**THEODORE MAIMAN**

Born 1927

Theodore Maiman was born in Los Angeles. After studying physics, he began research into methods of producing concentrated light beams. Earlier workers had produced the laser, which was used in radio astronomy to amplify low-wavelength radiation. In 1960, Maiman produced the most intense light that had ever been produced. He called his machine the laser.

**GEORGE MANBY**

1765-1854

Early fire extinguishers in the 1790s were just glass bulbs of water that were thrown on fires. Although widely advertised, they were not much used.

In 1816, an English army captain named George Manby designed a portable fire extinguisher after watching a fire rage on the fifth floor of a building, where hoses could not reach. He invented an extinguisher, similar to modern water models, in which compressed air forced water out of a cylinder.

**GUGLIELMO MARCONI**

1874-1937

The physicist Guglielmo Marconi was born in Bologna, Italy. In 1895 he began to experiment with the new electromagnetic waves that had recently been demonstrated by Heinrich Hertz, the German scientist.

Later that year, Marconi built a telegraph that could receive and send radio messages over a mile. This was the first practical radio transmitter and receiver. However, the Italian Ministry of Posts and Telegraphs felt the system was not a big improvement on the existing electric telegraph.

The first Marconi moved to England where he set up a company called The Wireless Telegraphy and Signal Company Ltd. In 1901, he succeeded in transmitting a radio signal right across the Atlantic.

Three years later, he shared the Nobel Prize for physics with Karl Braun, who increased the range of Marconi's transmitter.

**WARREN MARRISON**

1890-1980

The quartz clock was invented in 1929 by Warren Marrison, a clockmaker from Orange, New Jersey. Marrison developed the clock while working for Bell Telephone Laboratories. The clock was very accurate, but it still used a glass tube and had to be kept at a constant temperature because the quartz crystal vibrated faster at higher temperatures.

This problem was later solved by using a ring of quartz in the clock, rather than a single crystal.

**WILHELM MAYBACH**

1846-1929

Wilhelm Maybach was born in 1846 in Germany. He was an excellent friend of and worked very closely with Carl Benz, who built the first practical gasoline-driven four-wheeled car. In 1885, Maybach designed the carburetor for this car.

In 1897, he left Benz to set up his own factory which made airships for Zeppelin Airships.

**MESOPOTAMIA**

One of the early places of civilization was a region in the Middle East between the Tigris and Euphrates often called Mesopotamia. The people of the region were among the first to use the wheel, build cities, and create a writing system.

Some of the earliest evidence of musical instruments comes from Mesopotamia. A Sumerian wall drawing, dating around 3000 BC, shows headdresses, drums, and reeded woodwind instruments all being played together.

**JOSEPH MONTGOLFER**

1740-1810

Jacques Montgolfier was born near Lyons, France. Their father opened a paper factory and the brothers worked there after leaving school. The brothers were fascinated by the possibilities of flight. On hearing of the work of an English chemist named Henry Cavendish who had discovered that hydrogen was much lighter than air, they made early attempts at filling a bag with hydrogen, but the gas escaped.

In 1782, they held burning paper under the opening of a large bag made of silk. The bag rose. They repeated the experiment on a much grander scale one year later. This time the balloons carried the first air passengers – a sheep, a duck, and a mouse. On November 21 of that year, the first manned balloon took off from the Bois de Boulogne in Paris and landed five miles away.

**NO**

- Yoshiro Nakamats
- NASA
- Igor Ostryakov
- Elisha Otis
- Nicholis Otto
**Yoshiro Nakamats**

**FL 1950**

Flexible and removable magnetic computer disks were patented in 1950. The patent was taken out by Dr. Yoshiro Nakamats, an inventor at Tokyo University in Japan, whose other 2,500 patents include golf club designs. Nakamats gave the sales license for the disks to the computer company IBM, who improved the design and released the disks for sale in 1970.

**NASA**

The Astronaut maneuvering unit was developed by NASA (National Aeronautics and Space Administration). It was first used in space in 1984, when the astronaut Bruce McCandless moved for 90 minutes around his spaceship, the Challenger. This was the first time a person had maneuvered in space without being tethered.

**Igor Ostryakov**

**FL 1969**

The first ionizer for the house was a very unusual one. It was made by a Russian scientist named Igor Ostryakov, who plugged his ironium plant into a high-voltage electricity supply so that it would give off negative ions. Commercial pocket-size ionizers were first made in England in 1969.

**Elisha Otis**

**1811-1851**

Elisha Graves Otis was an American mechanic who worked in a New York building factory. The hoist ropes he used to lift machinery to the upper floors would often snap, causing the platform to plummet downward. By 1852, Otis had developed a safe hoist with roughed guide rails and he went on to found his own elevator business, which he named the Otis Steam Elevator Company. In 1857, Otis’s company installed the first passenger elevator in E. V. Haight’s and Co., a New York department store. To demonstrate its safety, Otis stood in the elevator and ordered that the rope be cut. His safety device worked and has been used ever since. Otis’ elevators enabled architects to envisage buildings more than a few stories high. In this way, he revolutionized the Skyscrapers in cities around the world.

**Nikolaus Otto**

**1832-1891**

Nikolaus August Otto was born in Nuremberg, Germany. He moved to France, where he became very interested in the gas engines made by Edouard Lenoir, a French engineer and inventor. Despite having no formal technical training, Otto built his first engine in 1861, and in 1864 he started his own gas-engine company with Eugen Langen, a German industrialist. Five years later, Otto opened a larger factory at Osnabruck near Cologne in Germany.

In 1876, Otto built and patented the first gas-operated four-stroke internal combustion engine. Over the next 17 years, 50,000 Otto engines were sold, most of which were used in engineering factories. When Otto’s patent was made public in 1886, it was only a matter of time before his four-stroke engine was adapted for automobiles.