



Photo: Johnson Research & Development Co. Inc.

LONNIE JOHNSON AEROSPACE ENGINEER AND INVENTOR (1949-)

You may not have heard of aerospace engineer Lonnie Johnson, but chances are you've seen his most famous invention. In addition to working on big space projects, he created the popular Super Soaker!

Born in Marietta, Georgia, Johnson has been inventing since he was very young. At 18, he won an award for building a remote-controlled robot. After earning his master's degree in nuclear engineering at Tuskegee University, he joined the Air Force and twice won the Air Force Commendation medal.

Eventually he went to work at NASA, where he invented the Johnson Tube. This is a refrigeration system that makes it obsolete to use CFCs (chloro-fluoro-carbons) to cool things down. CFCs are chemicals that many scientists believe deplete the ozone layer of the atmosphere around the Earth.

Though he is now very wealthy—the Super Soaker has generated more than \$200 million in sales—Johnson continues to work. He has more than 40 patents, with 20 more pending.

GRANVILLE T. WOODS RAILROAD INNOVATOR AND MORE (1856-1910)

Granville T. Woods was a mechanical and electrical genius whose work made railroads safer in America. He patented the Synchronous Multiplex Railway Telegraph, a system that allowed communication between moving trains and train stations, thus avoiding accidents.

Thomas Edison sued Woods, saying that he had invented the system first. Yet the world-famous Edison lost to the virtually unknown African American at a time when Woods often had to ask friends to check out books for him because people of color were excluded from many libraries.

After losing the case, Edison tried to hire the mostly self-educated Woods. Woods said no and started his own successful company.

During his life, the inventor held more than 60 patents for a wide range of projects. He improved air brakes and overhead conducting lines for railroads, and even invented an electronic incubator that could take care of 50,000 eggs at once.



Photo Courtesy: Ohio Historical Society



File Photo: The Detroit News

ELIJAH MCCOY A 'GENUINE' INVENTOR (1843/44-1929)

Many people copied Elijah McCoy's most famous invention. But smart buyers insisted on "the real McCoy" instead of cheap imitations. We use that expression today to mean something that is genuine.

Working out of his own machine shops in Michigan, McCoy patented more than 50 inventions in his career, including a portable ironing board, rubber shoe heels, a lawn sprinkler and tire treads.

He is best known, however, for an automatic oil cup that allowed trains to oil moving parts without stopping.

The son of runaway slaves, McCoy was born in 1843 or 1844 in Ontario, Canada. He grew up taking machines apart and putting them back together.

He studied mechanical engineering in Scotland, but the only job he could find in the United States was as a fireman/oilman on the Michigan Central Railroad. It was there that he developed the automatic oil cup.

Science and Leadership

Many inventions came about when someone found a way to put science to an everyday use; or someone found a way to put science to a new use. Search the ads in today's newspaper for new products that are available this year. Pick five that interest you. For each write down what kind of science might have been used to develop the product, and why.



Photo: Jan-Michael Stump

Earl Lucas has a collection of 1,000 Hot Wheels cars.

EARL LUCAS DESIGNER OF FUTURE CARS (1970-)

He works 10- to 12-hour days, but never looks at the clock. That's one big reason Earl Lucas designs cars.

"You get paid for sketching," said the Southfield, Michigan, resident, who started drawing at 3 years old. "They actually pay you for coming up with the future."

As a Ford Motor Company design manager, Lucas works with three or four car designers on the exterior "shape, look and style" of a vehicle. Another team designs the interior.

During the two-year design process, 10 to 20 ideas are narrowed down to one that works.

"There are always manufacturing and packaging restraints," explained Lucas, one of only 25 to 30 black car designers worldwide, according to Black Enterprise magazine. "But I've been very blessed. So far most of my projects have hit the road."

Always fascinated by cars, the Texas-born designer attended the arts program at Booker T. Washington High School with an eye toward "doing something artistic."

Interested in the 3-D process of creating jewelry from metal, he was recruited by the College for Creative Studies in Detroit. After two years, he switched from a crafts major to industrial design with a concentration in transportation design.

In college he helped design a van for elderly riders. That led to a job designing auto seats, door panels and headliners for an auto supplier.

That very practical work led to a "fantasy job" in Texas designing interiors for several planes owned by the wealthy sultan of Brunei. "Talk about decadence," Lucas recalled. "We used gold, platinum, all types of precious jewels."

Always intrigued by cars, Lucas encourages teens to go into the industry he believes "defines the world."

"Cars are really cool products," he said.

GARRETT A. MORGAN GAS MASKS AND TRAFFIC SIGNALS (1877-1963)

Garrett Morgan certainly helped make this a safer world.

Born in Paris, Kentucky, he went to work as a very young man. His job as a sewing-machine repairman led him to experiment with gadgets and materials in many fields.

Safety was a special interest for Morgan. The safety helmet and gas mask he invented were used by firemen in many cities in the early 1900s. In 1914, he was awarded a gold medal for the invention at the Second International Exposition of Safety and Sanitation in New York.

Two years later, he used the mask himself to rescue men trapped by a gas explosion in a tunnel being constructed under Lake Erie in Ohio. Following the disaster, which claimed 21 lives, the City of Cleveland honored him with a gold medal for his heroic efforts.

In 1923, Morgan received a patent for another new concept—a traffic signal that systematically raised and lowered "Stop" and "Go" signs to bring order out of chaos and improve traffic safety. His device was the forerunner of the traffic light signals in use today.



The safety helmet and gas mask invented by Morgan in the early 1900s broke ground for those used by firemen today.

Science and Leadership

1. Inventions often come about when people see a need to help make a task easier. Search today's newspaper for a photo of someone performing a task or working at something. Brainstorm an idea for a new invention that could make the task easier for the person in the picture. Give your invention a name and draw an ad to promote it to possible customers.
2. Sometimes inventions are created that appeal to specific groups more than others. Think about the needs of African Americans or other minorities in your community. What invention might be important or popular among African Americans in the near future?