

Grade 4-6 & 7-8 Skills Ontario Challenge 2022

“The Elevator”



The Challenge

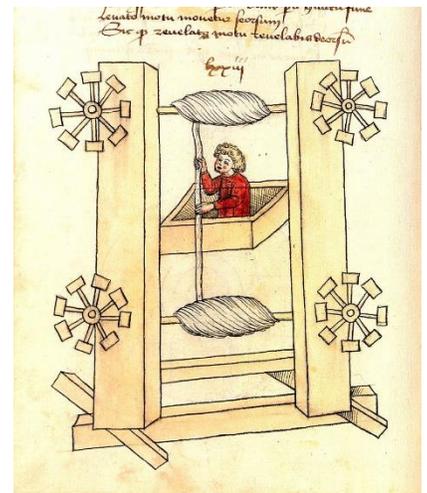
Using your LEGO set, battery box and motor, your team must design and build an elevator of your own design and it must meet the following specifications:

- Scoring will be based on Design Process, Team Work, Creativity and Functionality/Testing (meets task requirements i.e. can go up and down, carry two passengers).

What is an Elevator?

An elevator (in North American English) or lift

(in Commonwealth English) is a type of cable-assisted, hydraulic cylinder-assisted, or roller-track assisted machine that vertically transports people or freight between floors, levels, or decks of a building, vessel, or other structure. They are typically powered by electric motors that drive traction cables and counterweight systems such as a hoist, although some pump hydraulic fluid to raise a cylindrical piston like a jack.



History

The earliest known reference to an elevator is in the works of the Roman architect Vitruvius, who reported that Archimedes (c. 287 BC - c. 212 BC) built his first elevator probably in 236 BC.

Elevators through the ages

The development of elevators was led by the need for movement of raw materials, including coal and lumber, from hillsides. The technology developed by these industries and the introduction of steel beam construction worked together to provide the passenger and freight elevators in use today. Starting in coal mines, elevators in the mid-19th century operated with steam power and were used for moving goods in bulk in mines and factories. These devices were soon applied to a diverse set of purposes.



In 1823, Burton and Homer, two architects in London, built and operated a novel tourist attraction which they called the "ascending room", which elevated customers to a considerable height in the center of London, providing a panoramic view.

In 1852, Elisha Otis introduced the safety elevator, which prevented the fall of the cab if the cable broke. He demonstrated it at the New York exposition in the Crystal Palace in a dramatic, death-defying presentation in 1854, the first such passenger elevator was installed at 488 Broadway in New York City on 23 March 1857.

By 1900, completely automated elevators were available, but passengers were reluctant to use them. Their adoption was aided by a 1945 elevator operator strike in New York City, and the addition of an emergency stop button, emergency telephone, and a soothing explanatory automated voice.