

How Things Work in Rochester

Rochester is the birthplace to many famous inventions including cameras, microscopes and the vending machine! Explore these exhibits to learn about things that started off right here in Rochester.

How to use this guide

To help guide your visit, we have developed this learning pathway to explore a specific topic using some of the exhibit components.

1. Follow this path as you explore the gallery, try a different path, or create your own path and follow where your curiosity takes you!
2. Look up the words in bold in the vocabulary list on the back.



Think About It

- What do you think work was like before each of these **inventions**? How do you think the inventors changed things?
- Is there anything that would make your **work** easier? What do you think would make for a great new **invention**?



Path

COMBINATION LOCK

- 1857 - James Sargent revolutionizes bank security with the Magnetic Bank Lock.
- How do the combination lock and cylinder lock work differently? How are they similar?



GEARS

- 1950s - Gleason Works helps to connect the Atlantic and Pacific Oceans by building the **gears** that control the Panama Canal.
- Can you make all the gears on the table turn when you turn one gear?



BICYCLE CALIPER BRAKE

- 1985 - Georgena Terry founds Terry Precision Bicycles, designing and building bicycles for women.
- Watch how the **brake** works. How many other ways can you think to slow down the wheel?



BLOCK & TACKLE

- 1810s - The **invention** of the stump-puller helps speed up the building of the Erie Canal.
- Try pulling straight down on the rope, then try pulling as you walk away from the **pulleys**. Why do you think there is a difference?



D.C. MOTOR

- 1920s - Edward and Edmund Halbleib change history when they use a motor to invent the first **electric** typewriter .
- Why do you think the **coil** speeds up as it spins?



DIFFERENTIAL

- 1985 - Gleason Works debuts a revolutionary new **differential** to give vehicles **more traction**.
- What do the gears in the center do when one wheel stops turning?




What's Going On?

Many people know that Rochester is the home to inventions like George Eastman's hand-held camera, Chester Carlson's xerographic process, and Edward Bauch's compound microscope, but these are just a few of the major innovations that have started here. Rochester, NY still ranks among the top 5 cities in the country for patents per 100,000 people. Today, Rochester inventors are creating everything from materials that make better looking DVD screens and technologies to help us live healthier lives, to chemicals that help create snow for the worlds largest ski resorts!



Vocabulary

Learn More About It!

1,000 Inventions and Discoveries

DK Publishing, 2002

M. Hare

Rochester-made: From egg trays to marshmallows

Democrat & Chronicle, Feb. 27, 2005

D. Macauley and N. Ardley

The Way Things Work

Dorling Kindersley, 2004

S. Tomecek and D.

Stuckenschneider

What A Great Idea!

Inventions That Changed the World

Scholastic Reference, 2003

By Kids For Kids

www.bkfk.com

How Stuff Works

www.howstuffworks.com

National Inventors Hall of Fame

www.invent.org

Zoom Inventors and Inventions

<http://www.enchantedlearning.com/inventors/indexe.shtml>

Block & Tackle – A system of pulleys and weights used for lifting heavy objects.

Brake – A device that uses **force** to create enough **friction** to slow down a moving object.

Caliper – A device that pinches an open end together (like tweezers) to measure the thickness of something.

Coil – A continuous series of looped wire.

Differential – A set of gears that makes sure the left and right wheels get equal **power**, especially when turning a corner.

D.C. – Direct Current; Electricity that flows in one direction only.

Electricity – An effect caused by the motion of charged particles.

Force – A push or a pull.

Friction – The force caused by the motion of two objects that are touching.

Gear – A system of two or more interlocking pieces so that the motion of one controls the speed and turning effect of the other.

Invention - the idea of a new and useful device, material, or process.

Power – The rate of doing work, or how much work can be done in a given amount of time.

Pulley – A simple machine consisting of a wheel with a groove in which a rope can run to change the direction or point of application of a force applied to the rope

Work – Force multiplied by distance. The amount of energy related to the amount of force applied an object and how far that object moves as a result of the forces.