Outreach: *Early Engineers*
Ages 9-10; Grades 4-5
Total Length: 1 Hour

Contact Director of Education with questions at education@auburnheights.org or (302) 239-2385.

Program Description
Examine the accomplishments of engineers who designed the first automobiles, such as Karl Benz and Henry Ford, while learning the steps engineers follow to solve problems. Practice new skills during an assembly line activity and by building a sail car out of recycled materials to take home. **Technology Required**. A projection system to use or a blank wall to project against.

- 30 minutes of Presentation/ Interactive Questions
- 10 minutes Assembly line activity, groups of 5-6 (4 groups typically)
- 20 minutes Building Sail Cars

DE Standards: H1.4-5a, H2.4-5b, H4.4-5a&b, E1.4-5a&b
Common Core ELA: RI4&5.1, RI4&5.3, RI4&5.9, SL4&5.1, SL4&5.2, SL4&5.4, L4&5.1
NGSS: Engineering Design: 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3

Early Engineers Learning Objectives
During this program, students will be able to discuss the steps that engineers take to solve problems, American life before and after the invention of the automobile, and the contributions of key early automotive engineers. During this program, students will:

- Learn about the contributions of four engineers to the development of the automobile: Karl Benz, the Stanley brothers, and Henry Ford.
- Work in groups to run an assembly line to build laminated cars, analyze the advantages and disadvantages of the technique, and experience being a worker on an assembly line.
- Build sail cars out of recycled materials, evaluate the advantages and disadvantages of the materials used, and evaluate what materials or techniques would improve the design.

Teacher Resources
Visit the Teacher Resources section of our website (http://auburnheights.org/learn/teacher-resources-2/) for free pre & post visit materials (PDFs) to go along with your program. Have an idea for something you would like to use in the classroom? Let us know and we are happy to work with you to put together free resources to meet your classroom needs.

Recommended for this program:

- **Motion and Design: Automobile Patents (Grades 4&5):** In this lesson, students explore what intellectual property is by examining patents. By exploring early automobile patents, students will learn what a patent includes and what can be learned about an invention from a patent in comparison to what can be learned from the actual object.
- **Creative Writing (Grade 4&5):** In this lesson students will use the provided prints by artist A.B. Frost practice their creative writing by inventing a fictional story that describes the scene in the image. Students will then compare their story with the poem associated with the work of art.
- **Multiple Perspectives: The Ford Model T (Grade 4&5):** In this lesson, students use primary and secondary sources to explore different perspectives of the Ford Model T and its impact on the automobile industry and American life. To take this exploration a step further, students can then examine a second set of primary sources related to the 1908 Stanley Model EX steam car in the Marshall Steam Museum collection.