

LESSON 22

The Anchor Activity



An oral presentation is an important part of your Anchor Activity.

INTRODUCTION

Over the past several weeks, you have been either investigating how a device works or building a device of your own. Now you will share what you learned with your classmates and find out what they learned as well. In this lesson, you will display your poster or computer-generated program. You will also give an oral presentation to the class. Sharing knowledge is a key element of the scientific process.

OBJECTIVES FOR THIS LESSON

Display your poster or computer program showing what you learned about the device you selected to explore for the Anchor Activity.

Demonstrate how your device works.

Give an oral presentation about your device.

Inquiry 22.1

Presentations for the Class

PROCEDURE

- 1.** Your teacher will give you guidelines for displaying your poster or computer-generated presentation. Keep in mind that you may want to use this display as part of your oral presentation.
- 2.** Your teacher will organize the order of the presentations for your class. Make sure you have everything you need for your presentation. Review Inquiry Master 17.1b, which describes the guidelines for the oral presentation, so you will know how your teacher will be assessing your presentation.
- 3.** Listen to your classmates' presentations. As you listen, think about how what they did was like what you did. Also think about how what they did was different from what you did.
- 4.** Complete Student Sheet 22.1: Self-Assessment.

MATERIALS FOR LESSON 22

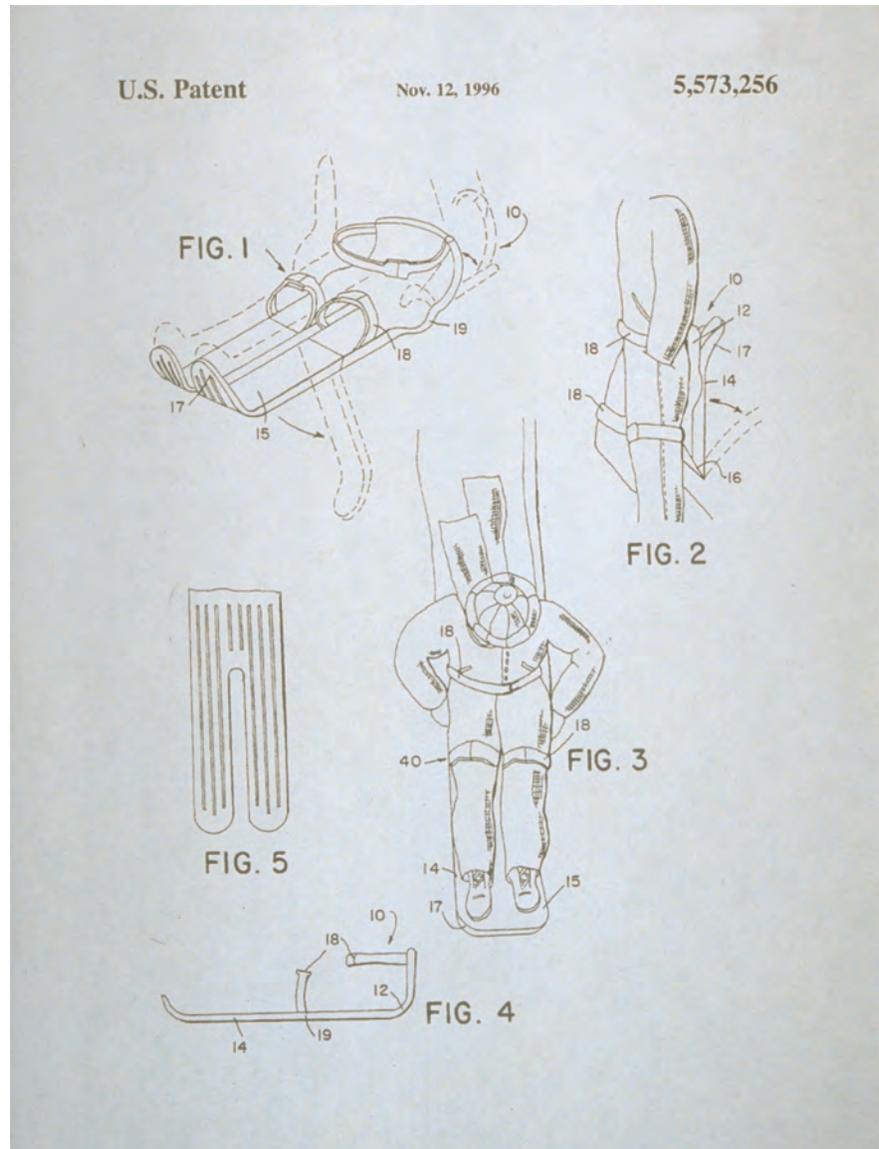
For you

- 1 copy of Student Sheet 22.1: Self-Assessment

UNUSUAL INVENTIONS

Alexander Graham Bell patented his design for the first telephone in 1876. The new device caught on quickly. By the turn of the 20th century, the U.S. Patent and Trademark Office had granted more than 100 patents for telephones. By 1946, the first mobile telephone service was started.

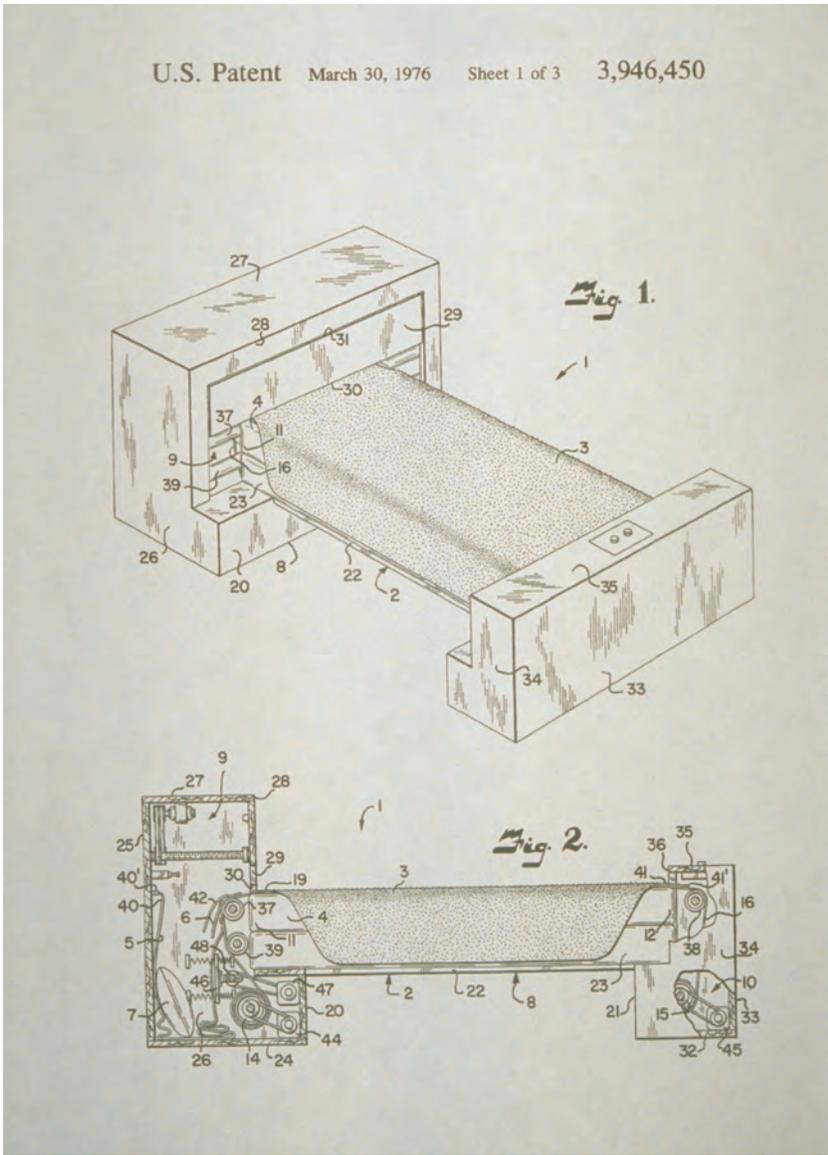
While some patented inventions, such as the telephone, quickly earn a place in homes and offices around the world, others never achieve that popularity. Here are drawings of two patented inventions. Look at each of them. What do you think the invention was designed to do? When you've made up your mind, turn the page and read the descriptions to see whether you were correct.



Invention A

COURTESY OF ALVIN D. STAGGS

U.S. Patent March 30, 1976 Sheet 1 of 3 3,946,450



Invention B

Invention A, shown in the photo on page 228, is a pair of sled pants. They are designed to spare people the job of carrying their sleds back up a hill. The pants are attached by a series of bands. The flap shown at the bottom of the drawing can be folded up for walking. When the flap is unfolded, it forms part of the sled.

Invention B is a bed-making device. It automatically removes a bedspread and replaces it with sheets and a pillow when the bed is about to be used. In the morning, the device pulls off the sheets and pillow and puts the bedspread back on the bed. Wouldn't you like to have one of these the next time your parents ask you to clean your room? □

QUESTIONS

1. Sometimes a good name can be the secret to a successful invention. What would you name the inventions described?
2. Are you surprised that neither of the inventions described in this reader caught on? Why or why not?
3. What factors contribute to a successful invention?

BUILDING A BETTER BICYCLE RACK:

The Man Behind Patent Number 3,847,317

Scientist Bob Burruss already has three patents, and he has two additional patent applications on file. When you talk to Bob about his inventions, you get insight into how scientists think and work, as well as a better understanding of the patent application process in the United States.

Bob holds a degree in mechanical engineering, and he's worked in that field since graduating from college. Experimenting with ideas, however, is not something that requires a college degree, in Bob's opinion. "A lot of science is just 'messing around,'" he says. In his case, the desire to "tinker" began by the age of four.

When Bob was still in grade school, a middle school teacher encouraged his interest in science. "I'd drop by her class every afternoon after school," he says. The teacher was a "generalist," and Bob bombarded her with questions about weather, space, and geology.

By the time Bob turned 16, school science fairs were among his favorite activities. He built an award-winning jet engine from scratch. He even had to teach himself to weld in the process.

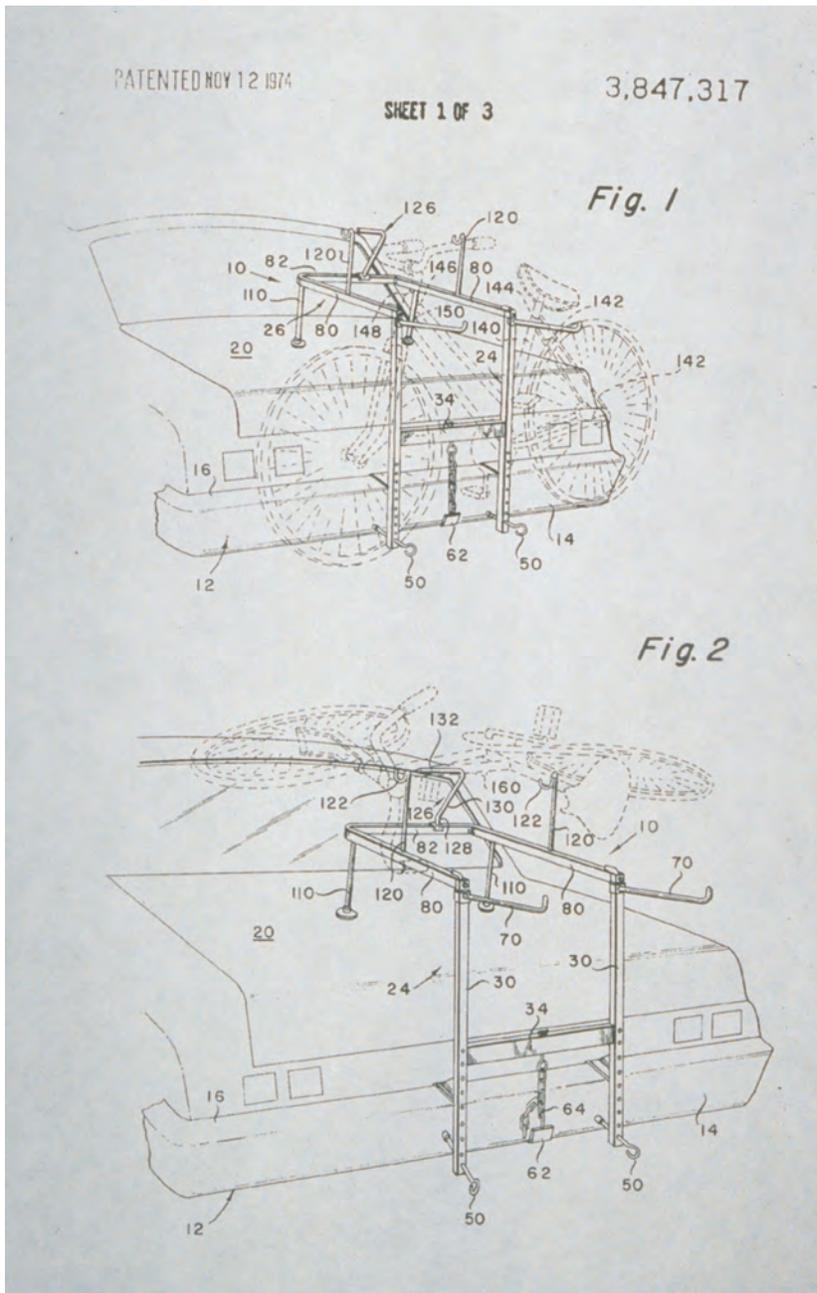
The approach he took to that high school project has been helpful throughout his life. If you're interested in science, Bob says, you have to learn by doing. "The only thing that comes from books is information. Actual knowledge comes only from doing," he says.

Tinkering is one thing. But where new designs and inventions are concerned, how does an idea become reality? Bob's experience with one of his patents helps answer this question.



Inventor Bob Burruss

COURTESY OF ROBERT BURRUSS



To obtain a patent, a drawing or diagram of the invention must be submitted. This is the diagram for the bike rack Bob Burruss invented.

In the 1970s, Bob worked for an engineering consulting firm. One day, his boss came by with a challenge. He asked Bob to design a car rack that could carry four bicycles. “No problem,”

said Bob. “I’ll have a design ready for you tomorrow.”

He made a design. His boss liked it. Bob’s next assignment was to spend a month developing a prototype of the rack. The cost of the prototype could be no more than \$200.

When the prototype model was completed, the next step was to design a production model. This time around, Bob’s goal was to make sure his design had as few parts as possible and could be assembled easily.

Bob continued to work on his production model. He knew the price was right. It could be easily assembled. But he was concerned about one important thing: How many people would buy a four-bicycle rack? Would the rack have a market? Only time would tell.

In the meantime, Bob and his boss, Samuel Raff, applied for the patent. It was granted on November 12, 1974. The patent number was 3,847,317.

One thousand bicycle racks were produced. Unfortunately, Bob’s prediction about the marketability of his new product was true. Only 200 of them were sold.

Nevertheless, it was a success story for Bob. “It was exciting to see those racks being used,” he says. “It was great to see my idea actually being used by people.”

Getting a Patent: What's Involved?

What is involved in getting a patent? It's not too expensive, but it does take some work.

Today, inventors often begin by applying for a provisional patent. It is good for one year and gives the patent holder coverage in most countries of the world. For an individual, it costs \$75 (companies pay more). The provisional patent, issued by the U.S. Patent and Trademark Office of the United States Government, protects the applicant's idea from being used by someone else. The inventor must submit notes and a sketch of the design. Inventors cannot talk about a new product or write anything about it until they hold a provisional patent. When the provisional patent has been granted, they can use the words "Patent Pending" if they are trying to sell their idea.

Applying for a final patent is more complicated. The inventor must follow a specific written format and provide a drawing that meets detailed specifications. A key part of the application is the "claims" section, in which the inventor defines

the invention. The cost of filing a final patent application is \$475 for private inventors.

A patent gives the inventor the right to prevent anyone else from making or selling the device in the United States for up to 20 years.

By the way, if you've got a bright idea and want to get a patent, there's no need to wait. You don't need to be an adult to file a patent application. The youngest patent holder is a four-year-old girl from Texas. Her patent is for a device that makes it easier to grab round knobs! □

QUESTIONS

1. What human need did Bob Burruss's invention meet?
2. What were the design constraints for his invention?
3. Can you think of something that would be a good invention? What would you have to do to get a patent for it?

COURTESY OF ROBERT BURRUSS



The completed bike rack. You can carry up to four bikes with this rack—very handy for families who bike together.