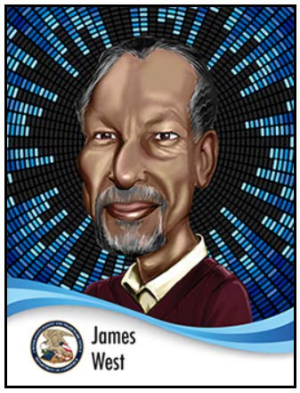
Rubber Band Kazoo: James West

A USPTO Inventor Card Activity Challenge



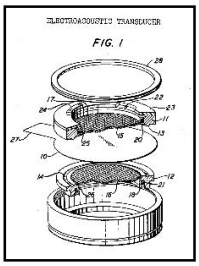


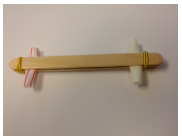
Figure 1 of Patent No. 3,118,022

Step 1

Step 2

Step 3

Step 4



Step 5

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Building a Homemade Noisemaker

An exercise in vibrations and sound waves!

Background:

Acoustical Science Inventor
Born: 2-10-1931 in Prince Edward County, Virginia

James West and co-inventor Gerhard Sessler developed the "Electroacoustic Transducer" more commonly known as the Electret Microphone, U.S. Patent No. 3,118,022. Ninety percent of all microphones produced annually and used in everyday items such as telephones, hearing aids, camcorders, and multimedia computers employ West and Sessler's technology. West holds over 200 U.S. and foreign patents.

West and Sessler's invention revolutionized industries in the field of electronic recording and transmission of sound. Sound is a type of energy made by vibrations. When an object vibrates it can cause movement in the particles of a medium, such as air and wood. This movement is referred to as sound waves. If your ear is within range of these vibrations, you will hear the sound. A sound wave travels until the vibrating particles of the medium run out of energy.

Activity Challenge:

Your challenge today is to make your own instrument that utilizes vibrations and sound waves. You will need two flat craft sticks or tongue depressors, a rubber band (the wider the better), two small rubber bands, tape and a straw.

Step 1. Tape around the edges of the two sticks. This will reduce the possibility of splinters.

Step 2. Place the rubber band lengthwise around one of the sticks.

Step 3. Cut two pieces of straw about an inch long. Place one under the rubber band near the left edge of the stick. Place the other straw on top of the rubber band near the right edge.

Step 4. Place the second wooden stick on top of both the straws.

Step 5. Use the smaller rubber bands at the edges to hold the two sticks tightly together.

Your instrument is complete! Now blow through the side of instrument in between the sticks and straws. What do you hear?

How does it work? When you blow into the instrument, air is forced between the two sticks and makes the rubber band vibrate. The vibration moves through the medium of the air and we can hear the sound waves.

Make it your own! Decorate the sticks before you cover them with tape! What happens when you slide the straw on top of the rubber band when you blow? What happens to the sound when you use longer or shorter pieces of straw? Can you play a song on your instrument?

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