DOUBLE RINGER

You might think a bell can ring with only one sound. Not true! You can get it to make two sounds at the same time. One is the familiar ring produced by a clapper hitting the side of the bell. You can add a second sound with a piece of wood.

You will need:
- a large handheld metal bell
- a smooth wooden stick, such as the handle of a tool or a wooden spoon

With your less-favored hand, grasp the bell by the handle, making sure that you are not touching the bell itself. The bell should be facing down. Hold a piece of wood in your other hand. Press the wood against the lower rim of the bell and move it repeatedly around the circumference with a smooth, circular motion. The bell should start to hum softly and get louder and louder. If it doesn't, check to make sure that you are keeping the wood in contact with the bell and that your hands aren't.

Once you've built up a vibrating hum, move the stick away and gently ring the bell normally. Listen for the two distinct sounds coming from it.
Insider Information
A bell rings because metal vibrates a long time after it is struck. (You can eliminate the ring by holding the bell rather than the handle. If your hand pre-vents the metal from vibrating, the bell makes only a short clunky sound as the clapper hits the side.) The vibrations in your double-sounding bell are created in two ways: by a single sharp hit and by many small ones. The bang of the clapper is obviously a sharp hit. What you might not realize is that wood stroked along the rim creates many small hits. The wood appears to be moving smoothly around the lip, but it's not. It is slipping and stopping many times per second. (Another demonstration of this kind of sound generation is the ring of a crystal glass caused by running a wet finger around the rim.)
The double ringer has two tones because the impact sound of the clapper is different from the ringing tone.