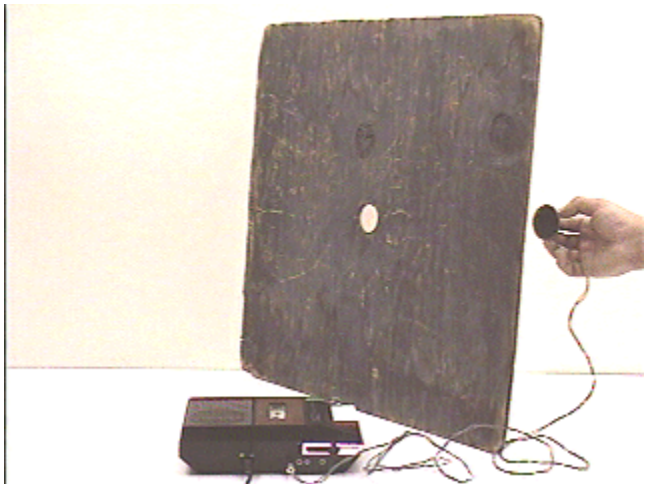
Answer #165

The answer is (a): the music becomes louder, as seen in another mpeg video by clicking your mouse on the photograph below.



Actually, the answer is really (d) other, in that the sound does get louder but something else very interesting happens in addition. When the speaker is in the open, sound from the front and the back of the loudspeaker, which are *out of phase* with each other, diffract largely in a completely spherical wave, and interfere with each other, causing the sound to become softer. When the speaker is placed up to the hole, the diffracted sound from the rear of the speaker is reduced, or at least forestalled until it is not exactly out of phase, so the sound increases in intensity. Diffraction is much stronger at low frequencies, so use of the baffle enhances the bass much more than the treble sounds; we hear mostly treble from the front of the speaker, but low frequencies from the rear more effectively diffract and interfere with the bass sounds from the front. The sound becomes less "tinny" as Gwen moves the speaker toward the hole. Can you hear this? Does his effect provide sufficient argument to change the answer from (a) to (d)?

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