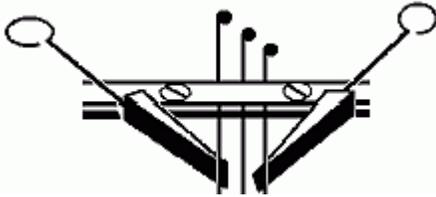




Hearing the Beat

Choose any note in the center of the keyboard and follow these directions:

(1.) Place one of the rubber mutes* to the left of the trio of strings and the other one to the right of the trio, leaving *only the middle string free to vibrate*. Push the mutes between the strings firmly, just below the upper bridge and above the hammer striking point.



Placing the rubber mutes

*To assemble string mutes, push tip of wire handle ½ inch into back of the rubber wedges.

For this first exercise, we will just assume the middle string is at correct pitch, and *adjust the two outside strings to match the middle string's frequency*. Place the mutes firmly between the string trios, so as not to interfere with the hammers.

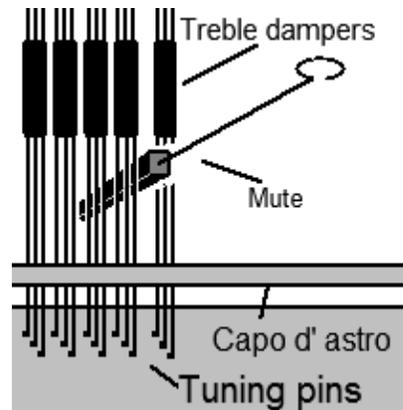
(2.) So, with only the middle string free, strike the key a firm blow and *hold it down* to sustain the tone. Listen closely. You should hear a *smooth, unwavering, steady tone*. Hit the note several times and get the sound fixed in your ear.



(3.) Now remove the **RIGHT** mute only, leaving the left one in place, so you have *two* strings

free. Hit the note again, holding the key down, and listen carefully to the sound.

Do you hear a difference? Unless your piano has just been tuned, you should hear a sound *very different from the single string sounding alone*. It will probably sound *twangy* to you; i.e., it will



have a *beating, wavering, pulsating, wave like* sound IF both the strings are not vibrating at exactly the same speed.

Placing mutes on grands.

Insert wedge between the Capo d' Astro (or frame bar) and the treble damper heads.

If you hear *absolutely no difference*, it means these strings are in tune. Replace the right mute, and remove the other one. If you still hear no difference, try another string, or just continue to *Step 4*.

This wavering sound wave becomes audible *only* when two strings are sounding at difference frequencies. It is called the *Beat*, and is much like the vibrato of a saxophone, voice or violin – a wavering, quivering **WAH-WAH** kind of sound (or WOW-WOW). The speed of these waves depends on how far the strings are out of tune. If they are fairly close, it may be a slow WAH-WAH sound per second. If the strings are further out of tune, it may be a quick WAHWAHWAH sound. If the strings are extremely out of tune, the wavering will be so fast as to merely create a general dissonance. *In any case, proceed:*

(4.) With both the right and middle strings of your note free to vibrate (the left mute still in place) put the tuning lever tip on the tuning pin of the **RIGHT** string. Place the tip on the pin as far as it will go and set the angle of the handle to the *one or two o'clock position* so that you can turn the pin counter-clockwise (loosen it) by pushing **UP** on the handle; tighten it by pulling the handle down, or toward you on grands (see illustrations).