





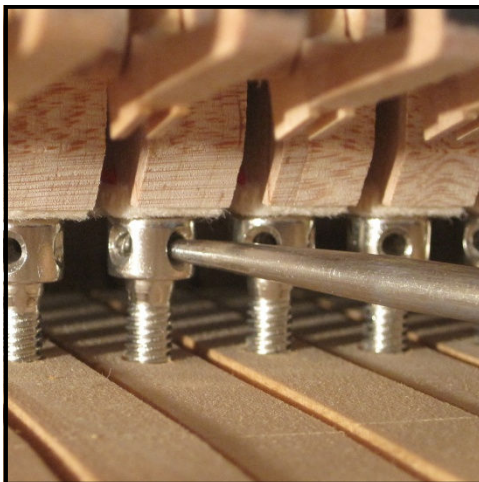




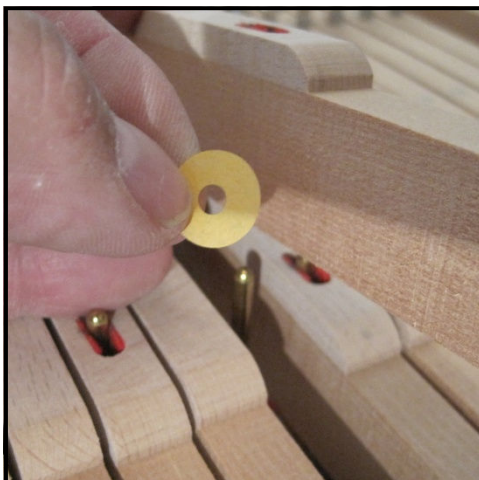
With the action in the workshop and on the bench and preliminary repair work done, the job of setting all important adjustments may be done with extreme precision. Each of the necessary settings is made for all eighty-eight notes of the piano, then checked and rechecked. Since every adjustment affects other adjustments, the process is not a simple "once and done" procedure, but more a process of refining the mechanism by going through the complete series of steps a number of times until everything is at the optimum setting.



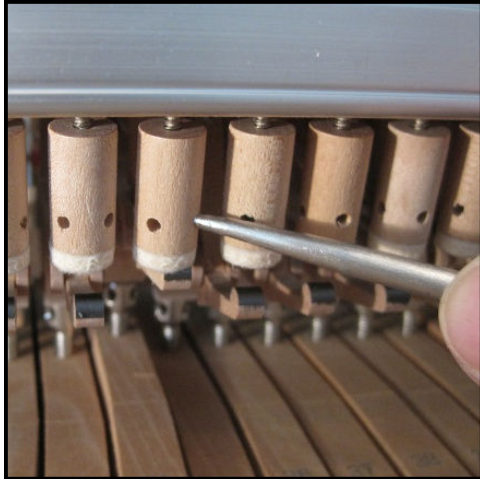
**A few of the steps involved and their significance are as follows:**



**Adjustment of capstans to raise or lower hammer height.** Hammer height refers to the distance from the striking surface of the hammers to the underside of the strings. This is set at the optimum distance for the hammer to swing to achieve maximum power. Just as the amount of swing is important to a golfer when he hits the ball, too little or too much swing when a note is played on the piano is not desirable.

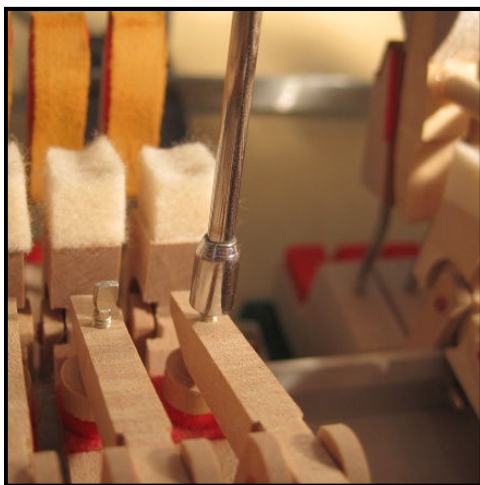
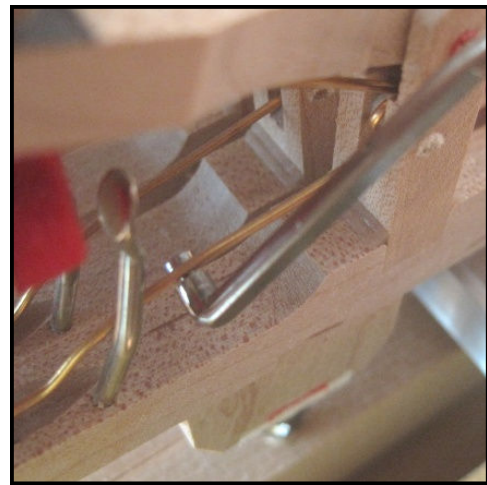


**Insertion of leveling papers to level keys.** Keys should be perfectly level from one side of the keyboard to the other. The keys rest on felt punchings, which sit on top of the balance rail. Leveling papers of differing thicknesses are then used to bring all the keys up to level. This is an exceedingly fine adjustment, with combinations of leveling papers used to create increments of .001".



**Adjustment of letoff buttons.** The letoff button releases the mechanism in its upward motion a split-second before the hammer reaches the strings. This way, the hammer is traveling under its own momentum when it hits the strings, and is not just shoved into them. This adjustment is made such that the hammers release as close to the strings as possible so that when the pianist plays with an exceedingly light touch, the piano will respond.

**Adjustment of the repetition springs.** Each note has a spring which helps the action to "reload" before the next note. This is done immediately after a note is played but before the key even has a chance to reach its rest position. The setting of this spring is critical, in that too much tension may cause double striking hammers, and too little tension will cause a very sluggish or even non-working note.

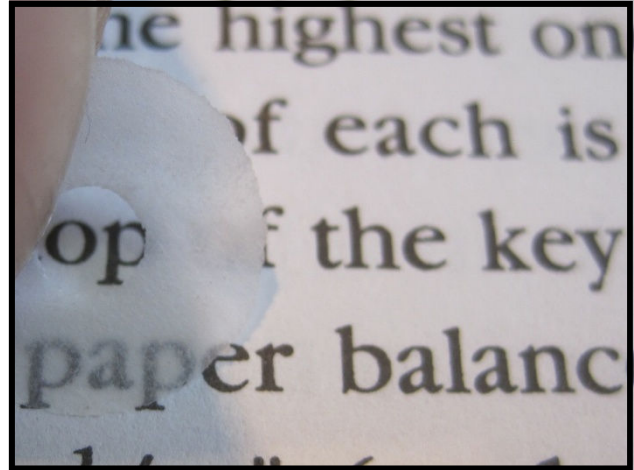


**Setting the height of the repetition levers.** This adjustment goes hand-in-hand with that of the repetition springs. The repetition lever holds the hammer assembly in position so that the note is always ready to fire. It must be set ever-so-slightly higher than another part (the 'jack') that propels the hammer towards the string. This is so that once the note is played, the jack may slip quickly back into place.

**These are just a few examples of the steps which need to be done.** Depending on the make and vintage of the instrument, up to 40 steps or more may be involved in the regulation of your piano. Getting all the various settings perfectly "in balance" with one another is a lengthy and very technically challenging process.

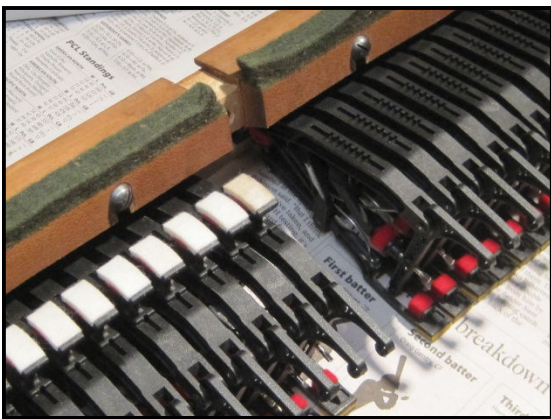
**Several times words to the effect that "fine adjustments" are necessary have been made. Just how exacting are the steps in the regulation process?**

Tolerances that are extremely close are standard. In the case of leveling the keys, for example, very fine leveling papers may be used (photo right). When this degree of precision is being pursued, it is understandable that the work can become quite time-consuming. At this level of precision, time is also necessary to check and re-check adjustments.



The initial run-through of adjustments will get settings close. However, as more and more steps are completed, things gradually shift in position throughout the action, and by the time the first run-through is completed, it is necessary to go back through for a finer round of adjustments. Two, three or even more rounds of adjustments may be necessary to bring the performance of the piano up to its potential.

**Are there other factors which may influence the amount of time needed to complete a regulation job.**



Yes. If the piano has not been serviced for decades, the time required to put the action back to factory specifications may be much longer than for a piano that has been maintained at regular intervals. Also, if the action is being rebuilt with entirely new parts, more time will be necessary. The rule of thumb is that the more new parts that are installed, the more time necessary for fitting and adjustments.

*New composite parts being installed in a 125 yr. old piano = much time spent regulating.*

**How often does a piano need to be regulated?**

For everyday pianos, a regulation every 5 - 10 years should be adequate. Since a piano goes out of regulation as a result of the amount of play, a piano which is used on a more regular basis will need to be regulated more often than one that sits idle for long periods at a time. Other aspects of piano maintenance, such as tuning, need to be performed on a more regular basis.

