Harpsichord & fortepiano

Vol. 5, No. 3 October, 1995

Musical Instrument Research Catalog
(MIRCat)

Care of . . .

Regular maintenance of your keyboard

AMONG the most annoying problems to meet in an early keyboard instrument is a buzz, rattle or extra-musical noise. The source may be elusive, especially if the unwanted noises occur only intermittently. These, like any other sounds are vibrations, but unlike conventional musical sounds they arise from the sympathetic resonance of usually silent parts of the instrument. These accidental resonances are excited by an intentional sound with which they often share a harmonic component.

The dead lengths of strings on fortepianos provide a good example. If left undamped, they give rise to many unwanted sounds. Yet on harpsichords these dead lengths are customarily left undamped and their sympathetic resonance can add a subtle richness to the tone. If, however, a string loop at the end of the dead length is not fully bedded down on its hitchpin or if, for some reason, the resonance of a single dead length becomes oddly prominent it may produce an intrusive noise. In fact, any string which does not make good contact with its pins and bridges is liable to make a buzz.

It is easier to find the source of such noise with a helper. One of you can continually play the note or combination of notes which causes the noise, whilst the other, using a gloved finger or a piece of soft cloth, touches each hitchpin loop or dead length of string, listening intently for silence! When the offending loop or dead length has been located, detune that string a little—no more than a minor third—and make sure it is well bedded down wherever it passes over a pin: at the nut, bridge, back- or double-pin and hitchpin. Then bring it back up to pitch. If the buzz persists, it may be necessary to dampen that dead length by pushing a very small piece of soft woollen cloth underneath the loop. Sometimes a single strand is enough.

Rattles or buzzes which arise from combinations of string dead lengths or internal parts of the instrument are usually more difficult to pinpoint and eradicate. Sometimes a soundbar—thin wooden strut attached to the underside of the soundboard—works loose and begins to vibrate against the soundboard, causing a very intrusive noise, often on a variety of frequencies. Similar effects may be caused if a portion of a bridge, nut (on virginals) or 4' hitchpin rail becomes detached from the soundboard or if the board itself parts company from the bellyrail—the strong structural member immediately behind the keyboards.

These more serious situations will tend to occur during or shortly following a period of environmental stress, where the instrument was exposed to conditions of extreme wet or dryness, such as the past summer in the UK. A move which was less than smooth and gentle—e.g., pushing the instrument on a trolley over a rough surface, upending it or, of course, dropping it—could easily result in disturbance to glue joints. Antique instruments are particularly vulnerable to internal damage through rough handling, and extra care should always be taken. Ideally, such instruments should never be moved but if they must be, make sure an experienced person is present and that his or

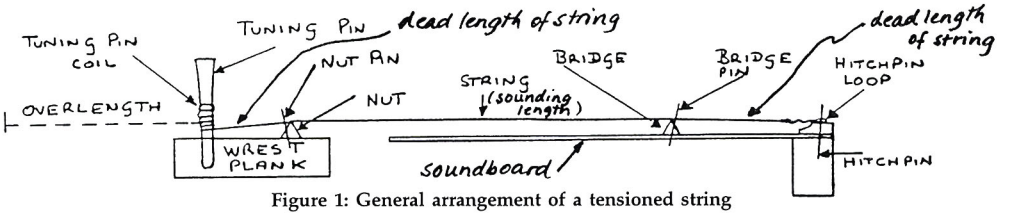

Figure 1: General arrangement of a tensioned string

her instructions are carefully followed.

Sometimes buzzes or rattles come and go, certain environmental conditions favouring or hampering them by varying fractionally the distance between resonating parts. This can often frustrate attempts to locate such noises or explain why 'the instrument was not making this sound yesterday'. It can also explain why internal damage, caused by dropping or rough handling, may take months to manifest itself, long after external evidence has been wiped away by repair. In general, internal damage to modern instruments should be attended to, if at all possible, by the maker.

Replacing a string

ON RARE occasions a very false string can produce an unpleasant extraneous sound. There is no option then but to replace it. The procedure can be broken down into several steps described below. For purposes of these instructions it is assumed that you possess replacement wires with ready-made hitchpin loops. Certain information is needed before beginning: the diameter of the string, the material from which it is made and the length of wire in excess of the dead and sounding lengths which gets wound onto the tuning pin—the so-called 'overlength'. If this information has not been provided by the maker, you can determine some of it yourself. The new string should have the same diameter as the old (within .01 mm) and can be measured with sufficient accuracy by a micrometer or electronic callipers.

The overlength can be measured with a rule by removing the original winding and gently uncoiling it. The uncoiled winding itself can even be used as the measure for the new overlength, if it can be pulled straight enough without breaking. Whatever the method, the new overlength must match the old, for it determines the final downbearing of the string: that is, the angle at which the string leaves the tuning pin and meets the nut. If the overlength is too short, the downbearing may be insufficient for the string to make good contact with the nut and nut pin, causing a buzz, and perhaps also a feeble sound. If it is too long, the angle may be too severe, causing undue stress and premature breakage.

The materials of strings is the only matter which cannot be determined accurately enough by simple measurement or unaided visual inspection. This information is most reliably obtained at the outset from the builder, for strings with similar appearances can have different acoustical and physical properties, making them wholly unsuitable to the scaling of your instrument.

The following instructions, intended for harpsichords and the lighter gauges of fortepianos, can easily be adapted for instruments which have drilled and/or non-traditional tuning pins.

- Carefully remove all the jacks for the note concerned
- Withdraw the tuning pins from the wrestplank using the tuning hammer, winding anticlockwise and pulling straight upwards
- Select a new string of the correct diameter and material
- Being careful not to kink the wire, slip the hitchpin loop over the hitchpin. Stretch the string to the front of the instrument
- Measure the correct overlength and cut off any excess. Begin the coil the same distance from the top of the pin as on a neighbouring pin
- Make sure that the sense of the coil you are about to make is such that a clockwise rotation of the tuning pin will raise the pitch. During the whole of the coil-winding operation, tension on the string must be maintained

The string holds itself onto the tuning pin by tightly coiling the wire around its own free end as shown in Figure 2. After the first few coils, when the string is firmly held, break off the free end by bending it from side to side and continue forming the coil until the wrestpin is over its hole.

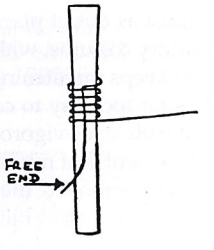

Figure 2: Winding a wire around its free end

- Lubricate with chalk the portion of the pin to be inserted in the wrestplank
- Using the tuning hammer and maintaining tension, push the tuning pin straight into its wrestplank hole until the projection matches that of adjacent tuning pins. Do not bend it from side to side while pushing it in. Alternatively, it may be push-started and then hammered in to the correct depth
- Make sure the string passes on the correct sides of the bridge and nut pins and that it is fully seated on the hitchpin
- Replace the jacks and bring the string up to pitch. The new string will require frequent tuning until it has stretched

. . . Mimi Waitzman