

of the instrument. This construction of the pin-block enables it to resist all changes of weather and temperature, another very important attribute.

When a piano is in tune, the 225 strings that are put into the instrument have a combined steady strain of twenty-five tons, most of which comes on the pin-block. The importance of the pin-block construction will therefore be realized.

#### The Sounding Board and British Columbia Spruce.

Piano sounding boards, in their construction, material and adjustments, have been for years the subject of the closest scientific investigation. The object has been to secure the necessary resilience combined with firmness and strength, which are necessary to secure the fullest tonal equality and development of the instrument.

From exhaustive investigations that have been made in this matter, it has been found that spruce is the best wood for this purpose, when it is grown in a climate where the conditions of the weather and the soil mature the wood in such a way as to give it the closest fibre, free from unnecessary moisture. Only in recent years has it been discovered that in the northern part of British Columbia is a spruce grown that is suitable, and makes excellent piano sounding boards. Previous to this most of the spruce was imported from the States.

#### The Iron Plate.

Just as the inventor of the railway suspension bridge figured out the distribution of the bridge's great weight, so is the iron plate of the upright piano designed to withstand pressure. No one point must bear more per inch than the other, as the strain of the strings amount to about fifty thousand pounds. So the equal distribution is of vital importance in the construction of a piano plate and in the maintenance of tone.

Vibrations from this iron plate must not conflict with those of the sounding board, or the influence of the strings, as the purity of tone would be impaired. It is for that reason that some features which appear in the next paragraph, became necessary in the construction of the Mason & Risch piano.

#### The Overstrung Scale.

This is constructed on exact mathematical and acoustic principles, producing through the entire register depth, richness and purity of tone. The one objective point has been beauty of tone. No matter what other qualifications a piano may possess, it is valueless unless it produces a superior quality of tone.

#### The Separate Agraffe System.

There is in all pianos a device for preventing vibration of that part of the piano string which is between the tuning pin and the bridge. In the Mason & Risch piano construction, the separate agraffe screw is exclusively used for this purpose.

In most pianos a simple metal bar is used which traverses all the notes, necessarily giving them a metallic influence, which greatly mars the purity and richness of tone. Another objection in the metal bar is that the strings of a note are liable to shift their position and thus spoil the tone. A separate brass screw agraffe isolates each note, and each of the three strings of the note, from those adjoining, thus permitting a clearness and purity of tone otherwise impossible.

#### Piano Action.

The action of a piano has often been compared to the heart in the human body. It is the vital part of a piano. It must respond to the player's every graduation of touch. It must be sensitive enough to stand the heaviest demands with continuous use. Its part in the production of tone is most important. The wood used in its construction is selected with the utmost care. It is thoroughly seasoned, and there are many different kinds of wood used—each chosen for its fitness to meet the special requirements.

The action of a Mason & Risch piano is designed on scientific lines to enable the parts to work together without friction, and produce the maximum of power with the minimum of force. Thus the action is known for its accuracy and its great power for rapid repetition. It is noted for its elasticity, sensitiveness, and evenness of touch. That is due principally to two features, which I shall describe:

(1) **The Action-Regulating Rail.**—The regulating rail in the action of a piano is that part on which the trueness of the action depends. The slightest warping or twisting of this rail caused by climatic extremes immediately affects the action. The hammers are thrown out of alignment, and the action loses its responsiveness of touch. In the action of the Mason & Risch piano, the regulating rail is encased in a brass tube, which prevents its warping. This is one reason why these pianos, after many years of use, are as perfect as when the instruments first leave the factory.

The other feature is (2) **Continuous Brass Flange.**—The range of a piano action is that part to which the hammers are attached and on which they operate. It has to hold the hammer firmly so that it will strike the note full, and with effective clearness. The advantages of a continuous brass flange are as follows:

1. The use of metal, instead of wood, avoids any possibility of expansion, shrinking, or warping.
2. The flange being a continuous piece, preserves unvarying alignment of the hammers.
3. The Mason & Risch method of attaching the knuckle of the action to the flange by a metal piece which is tongued at the end and fits into a groove in the flange, prevents any lateral play or wobbling of the hammers from one side to the other.

These points in the action are of vital importance, as the blow delivered by the hammer on the strings must be at a certain point in order to secure the full and free vibration of the strings which compose each note.

It may be inferred from this outline of construction that the life and tone of a piano depend more on the parts that cannot be seen, than on what is visible, and that the piano industry in Canada is not only an important part of our national business life, but also equal in quality to the industry of our cousins across the border.

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