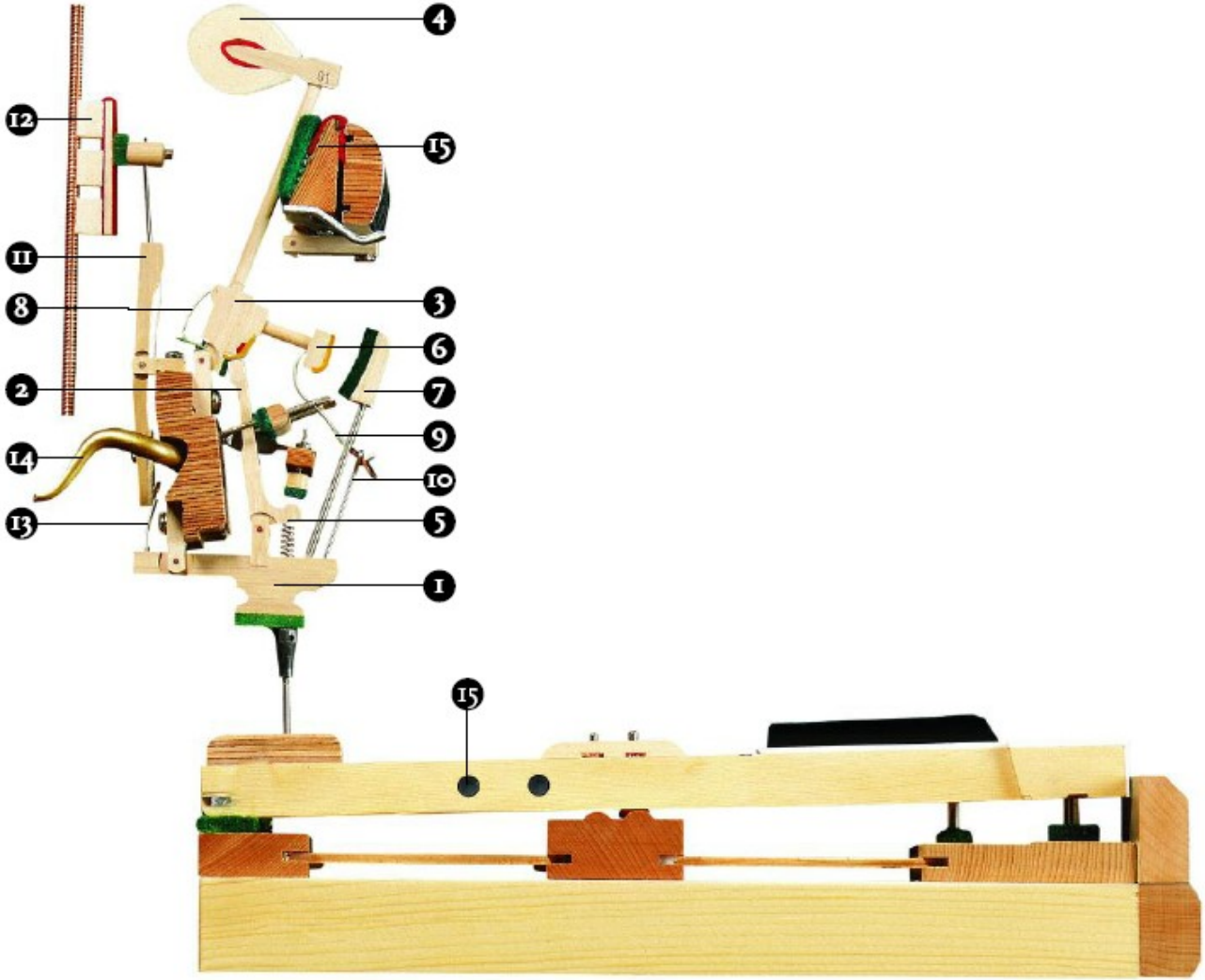
The piano's heart

The keyboard and action assembly of an upright piano - details



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From the keys to the hammer heads

The piano/ action assemble also work under the jack action principle. Depressing the front half of the key causes its back half to be raised which in turn pushes upwards against the whippen (2), raising it. The jack (2), which pivots on a flange mounted to the whippen, transmits the upward motion of the whippen to the hammer butt (3), causing the hammer head (4) to move towards the strings.

Immediately before the hammer head strikes the strings, the jack tender is pushed against the regulation button, tripping the jack tongue (2) out from under the hammer butt (3), interrupting the direct contact between the jack and the hammer butt and hence disconnecting the key from the hammer.

After the hammer head has bounced off the strings, about a third of the way back to its rest position, the backward motion is arrested by the back stop (6) being caught by the back check (7). As the hammer is being catapulted toward the strings, the tension of the hammer butt spring (8) is increased. This additional spring tension aids the return of the hammer.

Attached to the back stop (9) is the bridle strap (10), which is hooked onto the bridle wire (12). Its purpose is to jerk the hammer head backward under specific repetition frequencies. As the key returns to its upper rest position, the jack (2) slips back into its attack position under the hammer butt (3) ready for a new blow. It is know from a series of specialist mechanisms that the return to the attack position is additionally supported by springs or magnets.

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Damping system – pedal functions

The damping mechanism is located under the hammer heads and in front of the strings. Springs in the damper levers (11) produce the necessary pressure to dampen the stings.

When the damper is in its rest position, the damper string keeps it tightly pressed up against the string. When the key is depressed, the damper spoon (13) pushes the lower end of the damper lever (11) forward, lifting the damper (13) off the string, to allow for uninterrupted vibration.

Depressing the sustain pedal (right pedal) causes the lower ends of all the damper levers forward, lifting all dampers at once, regardless whether the keys are depressed. This is with help from a damper tongue (14).

The soft pedal (left pedal) causes the half-blow rail (15) to be pushed forward, reducing the hammer blow distance, reducing hammer acceleration. The strike power of the hammer heads is reduced and therefore the volume of the produced note.

The middle pedal is often used in upright pianos to mute the playing (moderator). A strip of felt is moved in front of the strings, reducing the kinetic energy of the hammer head striking the string and therefore reducing the related volume.