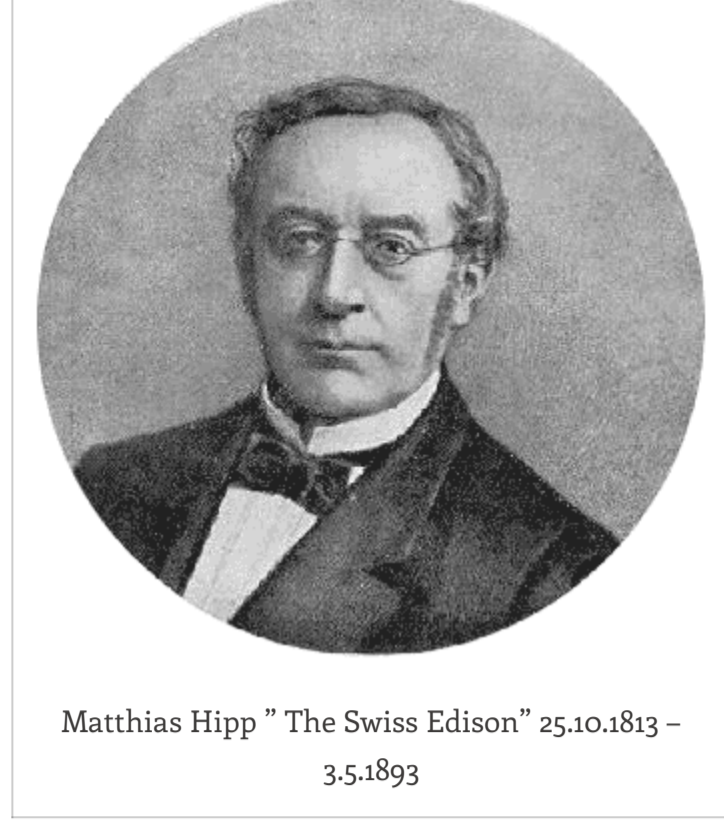


'Electromechanical Piano' Matthias Hipp, Switzerland, 1867



Matthias Hipp "The Swiss Edison" 25.10.1813 – 3.5.1893

Matthias Hipp's many inventions and adaptations include; Chronoscopes, Chronographs, Galvanometers, railway signalling equipment, watch and clock mechanisms, Telegraphic time detectors, telexes, networked electronic clocks, fire alarms, Microphones, Seismographs, electronic Gyroscopes and possibly the first 'real' electronic musical instrument.

In 1867 Hipp created an 'Electromechanical Piano'. How this instrument operated is unclear, no contemporary records exist that describe the instrument in any detail but modern texts suggest that it was a 'true' electronic instrument, generating sounds through multiple dynamos:

"Going back to the first electrical instruments, the conception of the electromechanic piano is due to Hipps (whose first name is unknown). This instrument was essentially composed of a keyboard which would activate some electrical magnets. These in their own right would activate some dynamos (small electrical current generators), the devices actually responsible for sound production. They were the same dynamos which, almost a century later, would be used in Cahill's Teleharmonium"

Andreas Baroni: "A brief History of Synthesizers"

"Electromechanical Piano – Developed by Hipps (first name unknown) who was a director of the telegraph factory in Neuchatel, Switzerland. The keyboard activated electromagnets that activated dynamos (small electric generators), which produced sound. Dynamos were later used in Thaddeus Cahill's Dynamophone (also known as the Telharmonium)."

Kevin M Walczyk "Electroacoustic Music A brief historical outline and recorded anthology"

or more prosaically, simply an electronically controlled player-piano:

"Electricity was used to operate player pianos from about 1850, and the basis for many later systems was developed by Matthäus Hipp of Neuchâtel in his 'electromechanical piano' of 1867

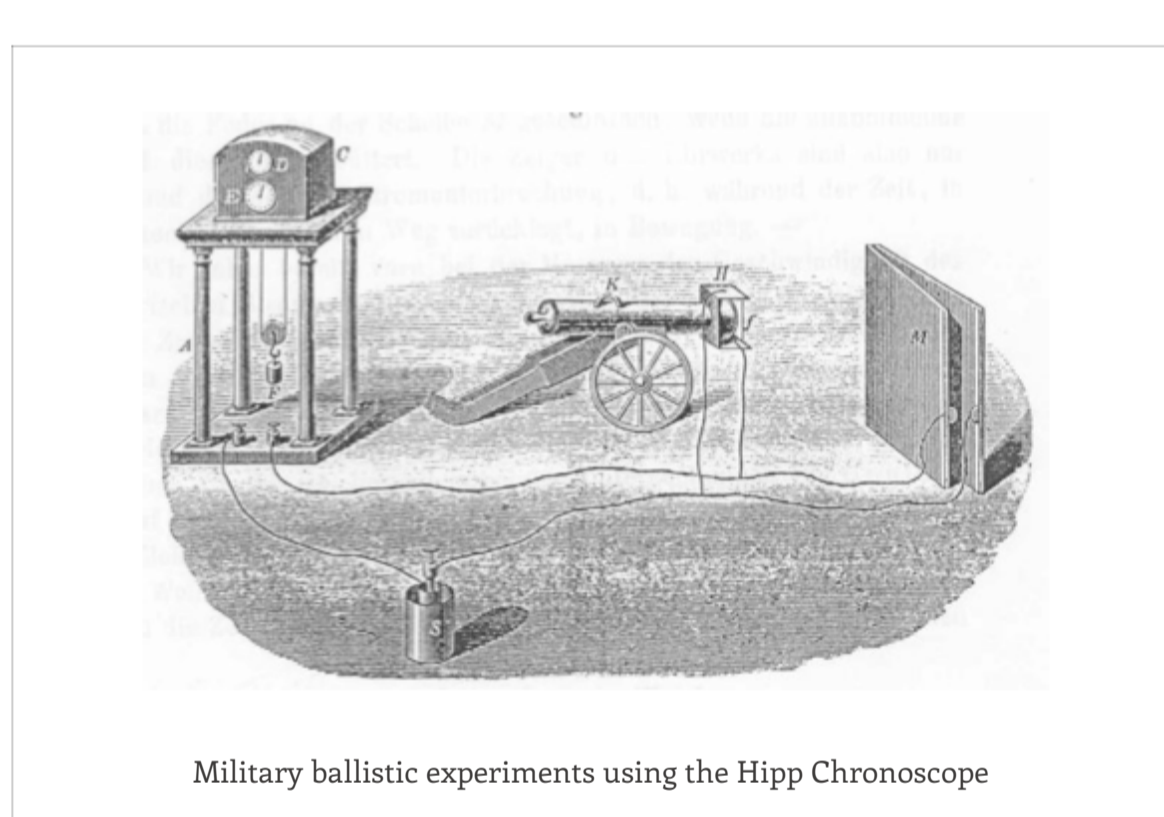
Hugh Davies. New Grove Dictionary of Music and Musicians.

Another possible method could be that Hipp extended the mechanism of the Hipp Chronoscope. The Chronoscope was an electronic clock designed to measure micro-events based around an escape mechanism regulated by a high frequency vibrating metal tine (rather than a pendulum). The problem was that to be accurate, the metal tines had to vibrate at a constant frequency of 1000hz and at the time the only way to calibrate was to hire a piano tuner who could hear the difference (phase) between a known 1000hz pitch tuning fork:

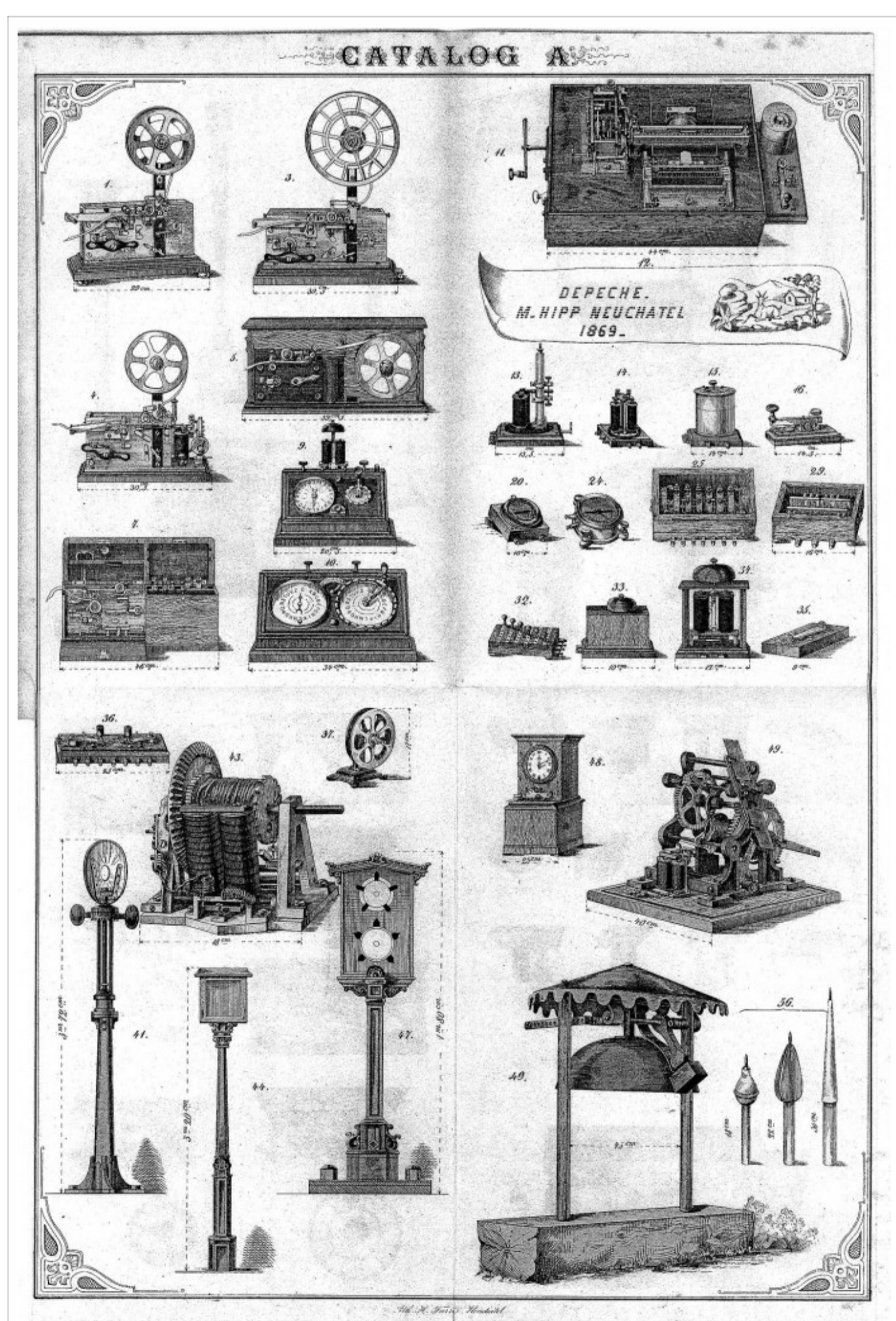
"We all know that some piano tuners are prodigiously accurate, and we can presume that similar paragons staffed the tuning fork manufactures of 19th century Europe. However, any physics course will show you that tuning forks have an easier potential for high accuracy of frequencies than many other devices. This potential is found in the audible phenomenon of beats, in which two tuning forks which are very slightly different will produce a signal of varying loudness. The frequency of this varying loudness is the difference in frequency of the two forks, thus permitting easy adjustment of the erring fork."

Edward J. Haupt Montclair State University

By simply changing the voltage supply to the metal tines via a keyboard, Hipp would have been able to create a scaled set of frequencies. Whatever technique Hipp used, the Electromechanical Piano seems to have been a one-off curio for Hipp, it doesn't appear anywhere alongside the more commercial inventions in his illustrated catalogues of the period or in the inventory of the Neuchatel Telegraph factory.



Military ballistic experiments using the Hipp Chronoscope



Part of an illustrated catalogue from the Neuchatel Telegraph Factory showing numerous inventions of Matthias Hipp but with no mention of the Electromechanical Piano. c1869

Sources

Hugh Davies. New Grove Dictionary of Music and Musicians. Macmillan Publishers Ltd

"Electroacoustic Music A brief historical outline and recorded anthology". Kevin M Walczyk, Western Oregon University. 1997, Keveli Music

Andreas Baroni: "A brief History of Synthesizers"

'The Hipp Chronoscope'. Dr Thomas Schraven, Krefeld. 2003

'The Controversy between G. E. Müller and Wilhelm Wundt over the proper measurement of reaction time'. Edward J. Haupt, Montclair State University 1999.

Links

Biography of M.Hipp <http://www.medienkultur.org/smi/gdg/ha/>