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German Square Pianos with *Prellmechanik* in Major American Museum Collections: Distinguishing Characteristics of Regional Schools in the Late Eighteenth and Early Nineteenth Centuries*

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UNTIL NOW, NOT MUCH HAS BEEN PUBLISHED about German square pianos of the eighteenth and early nineteenth centuries beyond descriptions of their actions.¹ Most earlier authors dealing with the different kinds of actions found in German square pianos concentrate on instruments preserved in Europe.² However, a remarkable number

*I am most grateful to Laurence Libin, The Metropolitan Museum of Art, for his help in arranging an Andrew W. Mellon Fellowship to undertake this research project, and for his and Kathryn S. Libin's great support during my year in the U.S.A. Further, I would like to thank Herbert Heyde, Cynthia Adams Hoover, John Koster, Darcy Kuroonen, André Larson, Joseph Peknik, Stewart Pollens, and Richard Rephann for their help, interest, and encouragement of my work, and for permission to examine instruments under their care. I also want to thank Klaus Martius for promptly sending me information about instruments at the Germanisches Nationalmuseum and archives in Nuremberg.

1. Recent articles about German square pianos include Bernard Brauchli, "Christian Baumann's Square Pianos and Mozart," *The Galpin Society Journal* 45 (1992): 29–49; Laurence Libin, "The 'Lying Harp' and Some Early Square Pianos," *Early Keyboard Studies* 8, no. 3 (July 1994): 1–8; Michael Cole, "Johann Socher's Square Piano of 1742," *Fellowship of Makers and Researchers of Historical Instruments Quarterly* 83 (1996): 75–84; and Cole, "Tafelklaviere in the Germanisches Nationalmuseum: Some Preliminary Observations," *The Galpin Society Journal* 50 (1997): 180–207. Three catalogues containing more detailed descriptions of square pianos are Hubert Henkel, *Besaitete Tasteninstrumente* (Frankfurt am Main: Erwin Bochinsky, 1994); John Koster, *Keyboard Musical Instruments in the Museum of Fine Arts, Boston* (Boston: Museum of Fine Arts, 1994); and Sabine Katharina Klaus, "Studien zur Entwicklungsgeschichte besaiteter Tasteninstrumente bis etwa 1830 unter besonderer Berücksichtigung der Instrumente im Musikinstrumentenmuseum im Münchner Stadtmuseum" (Ph.D. diss. [5 vols.], Tübingen University, 1994), vol. 4, *Tafelklaviere* (microfiche edition, Tutzing: Hans Schneider, 1998).

2. For example, Rosamund E. M. Harding, *The Pianoforte: Its History Traced to the Great Exhibition of 1851* (2nd ed., London: Heckscher & Co., 1978) and Walter Pfeiffer, *Vom Hammer* (3rd ed., Frankfurt am Main: Erwin Bochinsky, 1979).

of eighteenth- and early nineteenth-century German square pianos are also to be found in American museum collections. This body of material was the subject of a research project undertaken by the author in 1995–96, which was made possible by an Andrew W. Mellon Fellowship provided by The Metropolitan Museum of Art. During this year of research thirty-five stringed keyboard instruments were studied in detail, among them twenty-two square pianos originating in German-speaking areas of Europe and America. These instruments are housed today in five public collections: the Department of Musical Instruments of The Metropolitan Museum of Art, New York (MMA); the Division of Cultural History of the National Museum of American History at the Smithsonian Institution, Washington, D.C. (SI); the Museum of Fine Arts, Boston (MFA); the Yale University Collection of Musical Instruments, New Haven (Yale); and America's Shrine to Music Museum, Vermillion, S.D. (Shrine).

The present article offers a report on the first stage in an on-going research project about German square pianos of the eighteenth and early nineteenth centuries. It deals with square pianos having an action type in which the hammers are attached to the keys, the so-called *Prellmechanik* (fig. 1). (Square pianos with an action in which the hammers are pivoted independently from the keys, the so-called *Stoßmechanik*,³ will be the subject of a future article.) Square pianos which are currently located in American museum collections will be described and compared with related instruments preserved elsewhere (see Table 1 for a complete list). Relying on unequivocally signed and dated square pianos, the discussion will emphasize technical features which may serve as evidence to establish the existence of regional schools of German square piano building, whose characteristics can then be used as criteria for dating and determining the provenance of unsigned instruments. In addition, some German-American instruments will serve as examples of how German traditions of square piano building might have influenced makers in other regions.

The term *Prellmechanik* has been defined most clearly by Walter Pfeiffer:

The principal characteristic of the *Prellmechanik* is the position of the hammer: the hammer shaft is . . . attached to and pivoted on the key lever

3. A glossary of the terms used throughout the article can be found in Koster, *Keyboard Instruments*, 333–43.

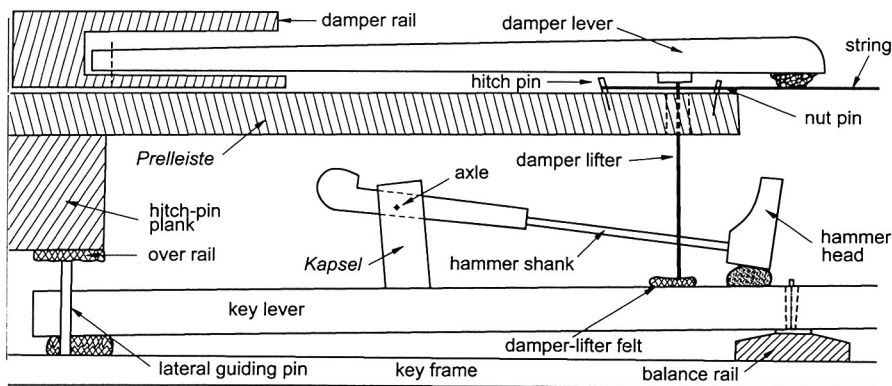


FIGURE 1. Parts of a *Prellmechanik*. Drawing: Sabine Klaus, computerized version by John Watson.

... and [therefore] moves with it; besides that it is mostly built as a two-armed lever. The hammer is usually set into motion, when no intermediate lever is present, by the hammer's "nose," "tail," or "beak" [i.e., the rear end of the hammer shank] striking against an obstacle.⁴

The oldest surviving unambiguously signed and dated square piano with this action type known to the author is an instrument by Joseph Anton Boos, built in Mainz in 1767.⁵ Joseph Anton Boos was baptized in Mainz on May 9, 1739.⁶ On the occasion of his first marriage on October 28, 1764, he was listed as an organist in the parish of St. Peter in Mainz. This position is also mentioned in 1785/86, when Boos lived "Am Petersweg."⁷ The date of his death is not yet known, but after 1801

4. Pfeiffer, *Vom Hammer*, 16: "Das grundsätzliche Merkmal aller Prellgetriebe ist die Lagerung des Hammers: das Hammerglied ist . . . auf oder an der Taste drehbar befestigt . . . und mit deren Bewegung verknüpft; im übrigen ist er vorwiegend als zweiarmiger Hebel ausgebildet. Der Hammerantrieb erfolgt, sofern kein Treiber dazwischentritt, im allgemeinen durch Aufprall der "Hammernase," des "Hammer-schwanzes" oder "Schnabels" gegen ein Hindernis." (The usual German terms for this obstacle are *Prelleiste* or *Prellzunge*.) See also Koster's definition of *Prellmechanik* in *Keyboard Instruments*, 339. For an explanation of the term "two-armed lever," see n. 18 below.

5. Germanisches Nationalmuseum Nürnberg, MINE 170. I am grateful to Klaus Martius for sending me information about this instrument. The authenticity of a square piano with *Prellmechanik*, inscribed *Gottfried Silbermann / Jev(vrier) 1749* at the Gemeentemuseum, The Hague, EC 132-x-1952, is doubtful (see Cole, "*Tafelklaviere*," 202).

6. Stadtarchiv Mainz, Kirchenbücher 20/49. I am grateful to Dr. Wolfgang Dobras, Municipal Archive Mainz, for sending this and the following information on Boos.

7. Heinrich Schrohe, "Die Mainzer Stadtaufnahmen des 16.-18. Jahrhunderts, 3. Teil," *Beiträge zur Geschichte der Stadt Mainz* 8 (1931): 187.

TABLE 1. Square pianos discussed, in chronological order by region.

Maker	Origin	Date	Present Location
<i>Rhine River vicinity</i>			
J. A. Boos	Mainz	1767	Germanisches Nationalmuseum, Nuremberg
C. Baumann	Zweibrücken	1775	Museum Carolino Augusteum, Salzburg
C. Baumann	Zweibrücken	1776	Ramsey House, Knoxville, Tenn.
C. Baumann	Zweibrücken	1777	Andreas E. Beurmann collection, Hamburg
unsigned	—	1777	Private collection, Vienna
T. Eppel	Sélestat	1778	Joseph and Pierre Hel collection, Lille
T. Eppel	Sélestat	1779	Yannick Guillou collection, Caen
C. Baumann	Zweibrücken	1782	Municipal Archive, Zweibrücken
C. Baumann	Zweibrücken	1783	Daniel Piollet collection, Paris
J. C. Jeckel	Worms	1784	Yale Univ. Collection of Musical Instruments, New Haven
J. C. Jeckel	Worms	1784	Händelhaus, Halle
J. C. Jeckel	Worms	1785	Kurpfälzisches Museum, Heidelberg
J. C. Jeckel	Worms	1785	Municipal Archive, Worms
Klein	Emmendingen	1786	Private collection, Switzerland
M. Bogner	Freiburg im Br.	1787	Museum Carolino Augusteum, Salzburg
J. J. Brosy	Basel	1790	Historisches Museum Basel
J. C. & C. Jeckel	Worms	1790	The Metropolitan Museum of Art, New York
M. Quante	Münster	—	Museum of Fine Arts, Boston
unsigned	—	—	Stadtmuseum, Munich, inv. no. 43-424
unsigned	—	—	Bernard Brauchli collection, Pully, Switzerland
unsigned	—	—	Germanisches Nationalmuseum, Nuremberg, MINE 182
unsigned	—	—	The Shrine to Music Museum, Vermillion, inv. no. 5259
unsigned	—	—	The Metropolitan Museum of Art, New York, no. 89.4.3161

continued

TABLE 1, *continued*

Maker	Origin	Date	Present Location
<i>Nuremberg</i>			
G. F. Trautner	Wendelstein nr. Nuremberg	—	Orgelbaumuseum Schloß Hanstein, Ostheim/Rhön
J. J. Bodechtel	Nuremberg	1801	Germanisches Nationalmuseum, Nuremberg
J. J. Bodechtel	Nuremberg	1802	Private collection, Nuremberg
J. F. J. Schneider	Nuremberg	—	Smithsonian Institution, Washington, D.C.
J. F. J. Schneider	Nuremberg	—	Yale Univ. Collection of Musical Instruments, New Haven
G. E. Hüfner	Nuremberg	—	Smithsonian Institution, Washington, D.C.
unsigned	Nuremberg (?)	—	The Metropolitan Museum of Art, New York, no. 89.4.1197
<i>From and influenced by Augsburg</i>			
J. D. Schiedmayer	Erlangen	<1785/97	Württembergisches Landesmuseum, Stuttgart
F. J. Wirth	Augsburg	1798	Deutsches Museum, Munich
J. A. Mahr	Wiesbaden	1801	Musikinstrumenten-Museum, Leipzig
G. Winkler	Munich	1802	Stadtmuseum, Munich
I. J. Senft	Augsburg	1804	The Metropolitan Museum of Art, New York
I. J. Senft	Augsburg	—	Musikinstrumenten-Museum, Berlin
J. A. Mahr	Wiesbaden	1805	Deutsches Museum, Munich
unsigned	—	—	The Metropolitan Museum of Art, New York, no. 11.176.4
<i>German-American</i>			
J. Huber	Northampton, Pa.	—	Wachovia Historical Society, Winston-Salem, N.C.
J. Huber	—	—	Northampton County Historical Society, Easton, Pa.
unsigned	—	—	The Metropolitan Museum of Art, New York, no. 1987.229
unsigned	—	—	Old Sturbridge Village, Sturbridge, Mass. (on loan at MFA)

he is no longer listed in the Mainz city directory. Although no archival confirmation of his activity as an instrument builder has yet been found, this is proved by the signature of his square piano: *Fait. / J: Ant: Boos Faiseur / des Clavecin et organiste / de St: pierre a Mayence / ao 1767.* (fig. 2). This handwritten signature on a paper label is found in the toolbox to the left of the keyboard, also the traditional place for signatures in clavi-chords. The *Prellmechanik* found in this square piano (fig. 3) resembles the action of the square piano part of the claviorganum by Adrien L'Épine, Paris 1772, which is depicted in François Dom Bedos de Celles's *L'Art du facteur d'orgues*,⁸ the first written source describing a *Prellmechanik*.

Square Pianos in the Vicinity of the Rhine River

Square pianos by Baumann, Eppel, and Bogner. There is a body of surviving instruments from south of Mainz, in the vicinity of the Rhine River (see fig. 4), which have a similar *Prellmechanik* and share several other characteristic features. The earliest instrument of this group was built in 1775 by Christian Baumann (1740–1816) in Zweibrücken.⁹ The *Prellmechanik* of Baumann's square piano has hammer shanks pivoted by threads in wooden forks, or *Kapseln*, and an underdamper system (that is, dampers which touch the strings from underneath) reflecting this action type by using two-armed damper levers pivoted in the same way (fig. 5). A similar action and damper construction is found in an unsigned square piano at the Musikinstrumentenmuseum im Münchner Stadtmuseum, inv. no. 43-424 (fig. 6). In these two instruments springs or counterweights press the cloth-padded back ends of the damper levers against the strings from beneath. When the key is depressed the damper lever's back end is lowered by touching a wire stretched from the belly rail to the hitch-pin plank, which serves as a kind of axis, transforming the damper part behind the *Kapsel* into a two-armed lever (see fig. 6). Bernard Brauchli mentions six instruments of this type, four of which are signed by Baumann and dated 1775, 1776, 1782, and 1783.¹⁰ Another

8. Vol. 4 (Paris, 1778), pl. 130; facsimile reprint, ed. Christian Mahrenholz (Kassel: Bärenreiter, 1966).

9. This instrument is now kept at the Museum Carolino Augusteum (MCA) in Salzburg, cat. no. B 15/1; see Kurt Birsak, "Klaviere im Salzburger Museum Carolino Augusteum," *Salzburger Museum Carolino Augusteum, Jahresschrift* 34 (1990): 57–60.

10. Brauchli, "Christian Baumann's Square Pianos," 29–49.



FIGURE 4. Map showing places of origin of the square pianos discussed.

There are also two square pianos of this type bearing the name Thiébaud Eppel, Sélestat (Schletstat), 1778¹² and 1779.¹³ Thiébaud Eppel (ca. 1732/3–1817) was an organist and instrument maker active in Alsace. His square pianos so closely resemble the instruments by Baumann in the shape of action and damper parts, the construction of the

12. Aude Cordonnier and others, *La Collection Hel: Instruments de musique anciens réunis par deux luthiers lillois*, exhibition catalogue (Lille: Musée de l'Hospice Comtesse, 1989), 51–52, inv. no. 33-1817.

13. Alain and Marie-Christine Anselm, "La collection Yannick Guillou," *Musique, Images, Instruments: Revue française d'organologie et d'iconographie musicale*, ed. Florence Gétéreau (Paris: Editions Klincksieck, 1997), 143–44, cat. no. 7.

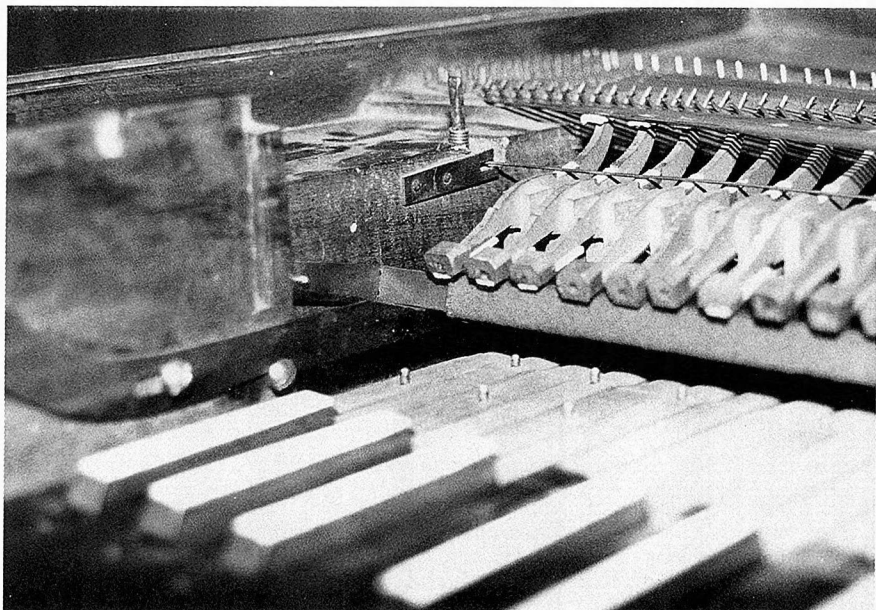


FIGURE 5. Dampers of the square piano by Christian Baumann, Zweibrücken, 1775. Museum Carolino Augusteum, Salzburg, cat. no. B 15/1. Photo: Sabine Klaus.

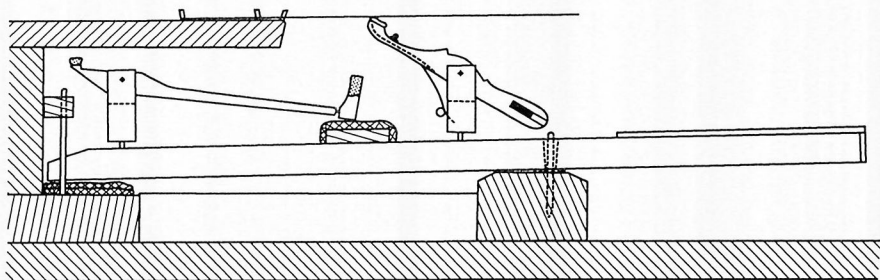


FIGURE 6. Action of an unsigned square piano. Musikinstrumentenmuseum im Münchner Stadtmuseum, inv. no. 43-424. Drawing: Sabine Klaus, computerized version by John Watson.

hand stops and of the hitch-pin plank with its characteristic ornamentation at the treble end, and a particular kind of double nut pinning, that one might have been tempted to attribute them to Baumann if they had not been signed by Eppel. Therefore one can conclude that Baumann

and Eppel based their instruments on essentially the same model. Another instrument built after a similar model is a claviorganum from 1787 by Michael Bogner (1757–1816), a builder active in Freiburg im Breisgau.¹⁴

Attributions of this type of square piano to a certain maker should be made very carefully. It can be assumed that instruments of this kind, signed by makers like Baumann, Eppel, and Bogner, were known in the 1760s to 1780s in a large area reaching from Alsace and the southwestern end of the Black Forest, northward to the Rhineland-Palatinate (see fig. 4).

Some features, such as the axle made of thread and the particular shape of the hammer shanks, or the ornamentation used at the treble end of the hitch-pin plank, can also be found in instruments by Johann Jacob Brosy, for example in his square piano *Nr. 137*, built in Basel in 1790, and kept there at the Historisches Museum (1909.416.). Johann Jacob Brosy (1748–1816) was active as organ and instrument builder in Basel from the 1770s to his death.¹⁵ An instrument maker named Klein, active in Emmendingen near Freiburg im Breisgau in the 1780s, also used threads for axle pivots in an underdamper system with wooden *Kapseln*, as can be seen in a square piano from his workshop, dated 1786, in private possession in Switzerland.¹⁶

Although these instrument builders worked in the area in which the Strassburg branch of the Silbermann family was active, no square piano of this type has survived with an unquestionably authentic signature by any member of that family (see note 5, above). Therefore, one should be careful in proposing a connection between this construction and the Silbermann workshop.

Square pianos by Jeckel and Quante. Three square pianos in American collections are related to the group of instruments by Baumann, Bogner, and Eppel described above: one signed by Johann Christoph and his son Christian Jeckel, Worms, 1790 (MMA 89.4.3552), one by

14. Museum Carolino Augusteum, Salzburg, cat. no. B 15/8; see Birsak, *Klaviere*, 68–71 and fig. 12a–b.

15. Veronika Gutmann, “Zum Schaffen der ‘Instrument und Orgelmacher’ Peter Friedrich Brosi und Johann Jacob Brosy,” *Basler Jahrbuch für historische Musikpraxis* 11 (1987): 31–61.

16. I am grateful to Georg F. Senn for drawing my attention to this instrument, and for offering me the opportunity to examine it.

Melchior Quante, Münster (MFA 1977.62),¹⁷ and one unsigned square piano (Shrine 5259). All three instruments have an under-damper system in combination with a *Prellmechanik*, in the case of Quante with escapement levers. However, in each case the damper levers of these underdampers are not built as two-armed but as one-armed levers.¹⁸ In the instrument Shrine 5259 (fig. 7) a horizontal rod presses the cloth-fitted end of the arc-shaped damper against the strings from below. This rod serves as a kind of axis, transforming the one-armed damper lever into a two-armed lever. Depressing the key causes the lifting of the damper lever's front and the lowering of its back. Instead of a horizontal rod beneath the damper lever, the square piano by Melchior Quante has a concave dowel approximately in the middle of each damper lever. A small metal rod connected with this dowel reaches through a cut-out of the key lever and rests with its lower end on a button hinged to the key frame.¹⁹ The damper levers of the square piano by Johann Christoph and Christian Jeckel have a little *Kapsel* connected with a small metal rod instead of the dowels (fig. 8). A similar damper system is found in the square piano by Klein, Emmendingen, 1786, mentioned above.

The Jeckel piano at The Metropolitan Museum of Art is signed on a paper label inside the soundboard compartment with the following inscription: "This Bandlony has been built by Johann Christoph Jeckel and his son Christian Jeckel, both citizens, organ and instrument makers in Worms, February 19, 1790" [*Dieses Bandlony haben verfertigt / Johann Christoph Jeckel, und desen Sohn Christian Jeckel, beyde Burger, Orgel / und Instrumenten macher zu / Worms den 19ten Febr: 1790*] (fig. 9). Johann Christoph Jeckel was born in Gondetz, Poland, in 1731. He worked as a cabinet maker's apprentice in Posen from December 20, 1750, to December 22, 1754. On April 8, 1763, he was recorded in Worms, when

17. Information about this instrument is mostly derived from Koster, *Keyboard Instruments*, 202–05, but it has also been examined by the present author. Koster gives the spelling of the last name as *Guante* in the main text, but points out in a footnote that the name was also spelled *Quante* in some archival material found by Herbert Heyde. This spelling is more likely in German. The workshop of Melchior Quante was established in 1792 (see Herbert Heyde, *Musikinstrumentenbau in Preußen* [Tutzing: Hans Schneider, 1994], 418); the dates of his birth and death are unknown.

18. A one-armed lever is a lever that extends in only one direction from the fulcrum; a two-armed lever extends in both directions from the fulcrum.

19. The action is illustrated in Koster, *Keyboard Instruments*, 204.

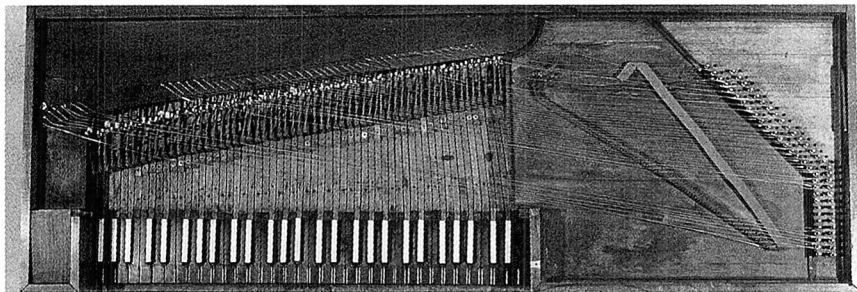


FIGURE 7. Unsigned square piano (soundboard in front of the tuning pins replaced). America's Shrine to Music Museum, The University of South Dakota, Vermillion, no. 5259. Purchase funds gift of Mr. & Mrs. James H. Nyberg, 1991. Photo: Simon Spicer.

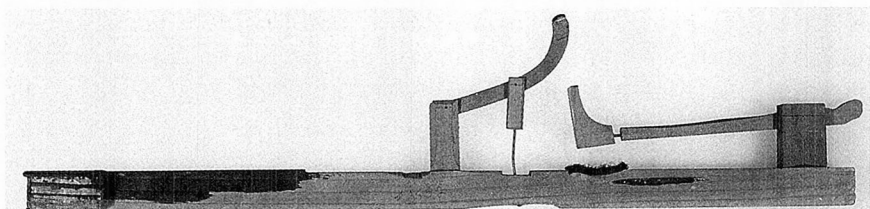


FIGURE 8. Key lever with action and damper parts from the square piano by Johann Christoph and Christian Jeckel, Worms, 1790. The Metropolitan Museum of Art, New York, 89.4.3552. Photo: MMA.

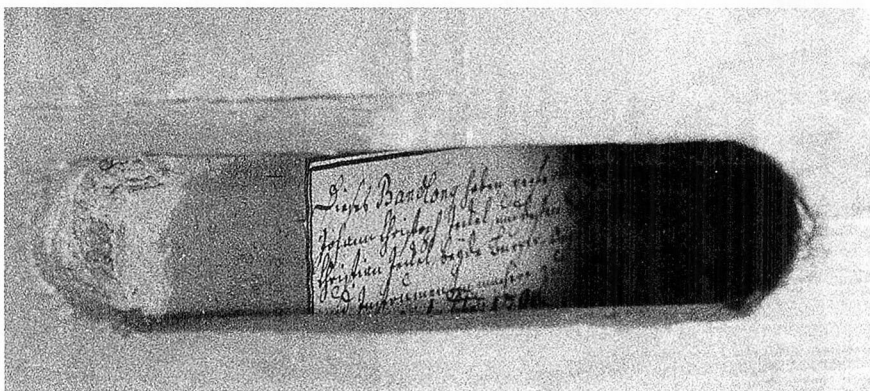


FIGURE 9. Signature on the square piano by Johann Christoph and Christian Jeckel. The Metropolitan Museum of Art, New York, 89.4.3552. Photo: Sabine Klaus.

he applied for admission as citizen and organ maker.²⁰ It is not yet known where Jeckel received his training as an organ builder. However, it is possible that he worked for Johann Georg Link, an organ maker in Worms who died on April 7, 1762, since Link's widow Maria Salome Link was the mother of Christian Jeckel, born on January 30, 1763.²¹ It is unknown when and where Johann Christoph Jeckel married the widow Maria Salome Link, but we do know that she was pregnant before their marriage, a circumstance which caused Jeckel to leave the city of Worms; he did not receive the citizenship he had asked for in 1763 until June 6, 1767.²² In April 1763 he lived in Frankfurt am Main, where he was employed at the workshop of an unknown organ builder, and where he remained until 1767.²³ Jeckel worked as an organ builder and pianoforte maker. From 1774 to 1810 he tuned the organ of Trinity Church in Worms and received 20 florins per year for this job.²⁴ Square pianos signed only by him are preserved from 1784 at New Haven (Yale, 4960.00) and Halle (Händelhaus, MS 1); and from 1785 at Heidelberg (Kurpfälzisches Museum, MB 229)²⁵ and Worms (Municipal Archive, no inventory number). Jeckel's square pianos are well-made instruments, allowing a clear distinction between original and non-original parts, and can therefore help in determining the origin of unsigned instruments. As they are dated precisely, they can also be used as a guideline for dating other instruments.

Worms is approximately 50 miles from Zweibrücken, close to the Rhine River (see fig. 4). The square piano building tradition of people like Baumann, Eppel, and Bogner seems to have extended north with some modifications. Münster is considerably farther north, but seems still to be part of the same building tradition, as can be seen in the square piano by Quante (MFA 1977.62). The square piano Shrine 5259 shares with the instruments by Baumann, Brosy, and Klein the use of an individual thread as axle for each *Kapsel*. This little feature hints that Shrine 5259 might also come from the Rhine River vicinity. It resembles the felt bushing of the *Kapsel* axle found in instruments by Johann Andreas Stein and Johann David Schiedmayer, as well as in the square piano by Quante, and prevents rebounding of the hammer by adding

20. Stadtarchiv Worms (StadtA WO) 1B/808. I am grateful to Dr. Gerold Bönnen, Municipal Archive Worms, for sending me transcriptions of the original documents.

21. Letter dated May 14, 1996, from Dr. G. Bönnen (StadtA WO) to the author.

22. StadtA WO 1B/595, Ratsprotokoll.

23. StadtA WO, Abt. 1B/824.

24. StadtA WO, Abt. 134, Bd. 6.

25. I am grateful to Roland Hentzschel, Händelhaus, Halle, for providing information about this instrument, which was restored by Nikolaus Damm.

more friction to the hammer axle. This feature is particularly suitable in square pianos with non-escapement actions without back check (a leather-padded piece that catches the hammer after it has struck the string), as there is nothing else to prevent rebounding.

The square pianos by Jeckel and Quante and the unsigned instrument Shrine 5259 are related in several basic constructional details beyond the features already mentioned. Their case construction (fig. 10) is in principle similar to that of German clavichords. The basis is a conifer bottom board 20 to 40 mm thick. The square pianos Jeckel 1784 (Yale), Jeckel 1790 (MMA), Quante (MFA), and Shrine 5259 have a one-layer bottom board, while the 1784 Jeckel in Halle has a two-layer bottom board. In German clavichords the grain of the bottom board usually runs parallel to the spine. To obtain greater strength in order to withstand string tension, the bottom board grain of Quante's square piano instead runs parallel to the strings. Jeckel seems to have experimented with this feature, since the bottom board grain is parallel to the strings in the instrument from 1784 at Yale, while the instrument in Halle, built in the same year, has a two-layer bottom board with upper layer parallel to the strings and lower layer parallel to the spine. In the 1790 square piano (MMA), however, Jeckel returned to a clavichord-like construction with the bottom board grain parallel to the spine but using a thickness similar to the two-layer bottom board of the square piano in Halle. The bottom board of

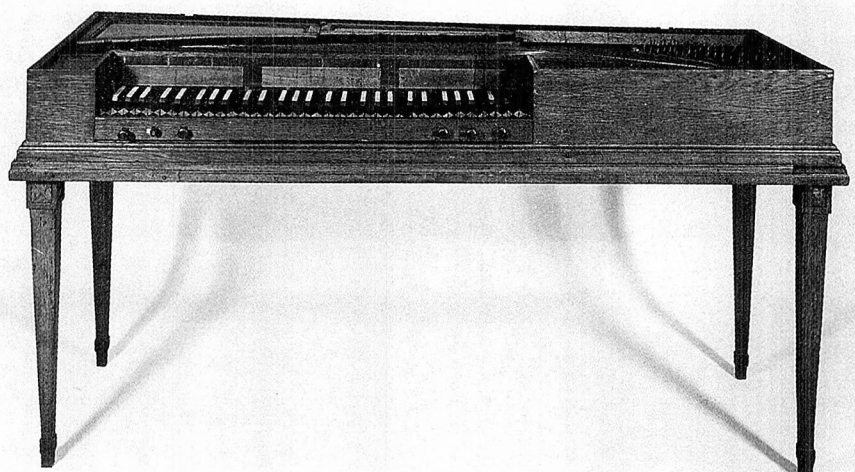


FIGURE 10. Square piano by Johann Christoph and Christian Jeckel. The Metropolitan Museum of Art, New York, 89.4.3552. Photo: MMA.

the square piano Shrine 5259 consists of a panel with two battens jointed across the endgrain at either side to prevent the bottom board from warping. The balance rail of this instrument serves as a stabilization brace as it is glued to the bottom board. In the instruments by Jeckel and Quante the wrest plank is supported by two struts glued to the bottom board, reaching from wrest plank to belly rail (see fig. 9).

In this group of instruments, as in German clavichords, the walls are set on top of the bottom board, and jointed together with dovetails. Open dovetails are used in connection with painted conifer walls in the Jeckel square pianos at Yale and Halle; hidden dovetails are found between front wall and side walls in cases of oak (Quante) or cherry (Shrine 5259). In Jeckel's square piano from 1790 (MMA) the open dovetails of the conifer walls are veneered with oak as in more elaborate clavichords of the same period.

Not only the case construction of these instruments but also the construction of the hitch-pin plank, wrest plank, belly rail, soundboard, and bridge is directly derived from contemporary clavichord building. The wrest plank is angled as in clavichords from 1740 onwards.²⁶ It is covered by the soundboard wood, into which the tuning pins are driven without additional reinforcement (see figs. 7 and 11). Only the square piano by Quante has a thick pearwood veneer in the area of the tuning pins on top of the soundboard to prevent splitting. This instrument shows an

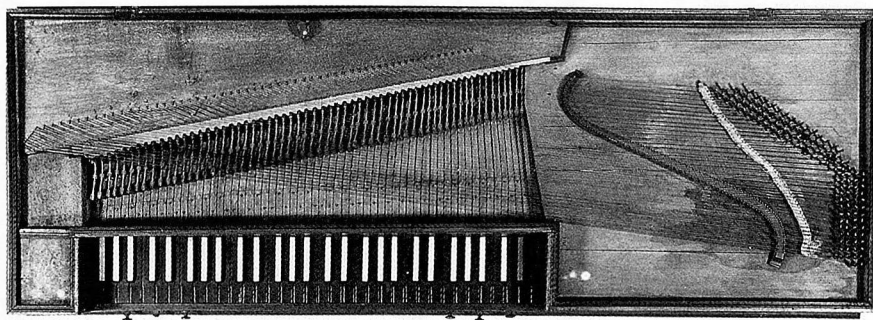


FIGURE 11. Square piano by Johann Christoph and Christian Jeckel. The Metropolitan Museum of Art, New York, 89.4.3552. Photo: MMA.

26. John Henry van der Meer, "The Dating of German Clavichords," *The Organ Yearbook* 6 (1975), 107.

ornamental treble end of the hitch-pin plank, similar to that found in instruments by Baumann, Brosy, Eppel, and Klein.

In the Jeckel square pianos from 1784 at Yale and in Halle the mouse-hole (the opening of the belly rail) is similar to the form often found in clavichords (fig. 12). In these two instruments, as in the square piano by Quante, belly rail and soundboard end flush with the top key lever. Soundboard and belly rail only slightly overlap the top key lever in the Jeckel square piano from 1790 (MMA). This construction is due to the space demands of the underdampers, which do not allow a large amount of soundboard overlapping, but historically it is also closely connected to common clavichord design. In contrast to this, later square pianos have often a soundboard considerably overlapping the key levers in the treble.

At least three of the square pianos by Jeckel (Halle, Heidelberg, and New York) have high, slender ribs, which are deeply undercut beneath the bridge. In all three cases three ribs are arranged approximately perpendicular to the angled part of the wrest plank, and extend to the front wall and to the belly rail. In the instrument at Yale the ribs seem not to be original, as they clearly do not match this shape. A peculiarity of Jeckel's square pianos is the way in which the bridges end in deeply undercut scrolls (fig. 13).

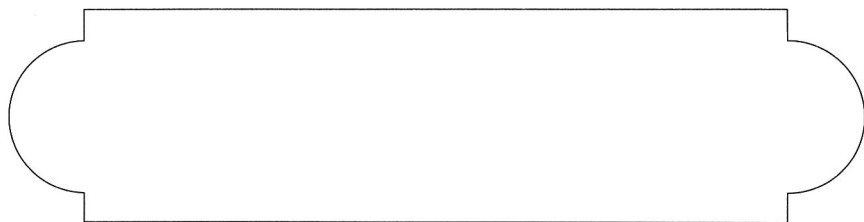


FIGURE 12. Shape of clavichord-like belly rail mousehole. Drawing: Sabine Klaus.

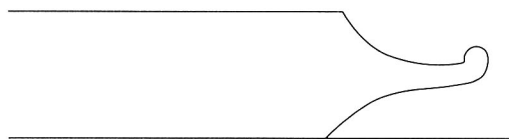


FIGURE 13. Shape of bridge ends of square pianos by Johann Christoph and Christian Jeckel. Drawing: Sabine Klaus.

The Jeckel square piano from 1784 at Yale has a compass of C to f³, which is frequently found in fretted clavichords in the second half of the eighteenth century. Jeckel's square pianos in Halle, Heidelberg, and New York, and the instrument Shrine 5259, have a compass of FF to f³, which is common in grand pianos of the late eighteenth century. The compass FF to a³ found in the square piano by Quante is rare. It is shared with clavichords by Christoph Friedrich Schmahl and his sons, another clavichord by Michael Voit (1812),²⁷ and several South German grand pianos.²⁸

All action and damper parts are mounted on top of the key levers in this type of square piano. The 1784 Jeckel at Yale and Shrine 5259 therefore have no key frame. In the former instrument the keys are guided at their far end by slips in guide slots sawn into the hitch-pin plank support block, the traditional method of key guiding in clavichords. Lateral oak slats serve as back guides for the key levers in Shrine 5259. The damper lifting device in the 1790 Jeckel (MMA), and the escapement levers of the *Prellmechanik* in the instrument by Quante, require the use of a key frame. In all square pianos of this group the key lever motion is stopped at the back, normally by hitting an over rail; however, in the Jeckel instruments this is accomplished by the top of the *Kapsel* hitting the underside of the *Prelleiste*.

Some distinctive features of the action and dampers of this group of instruments have already been mentioned. In the instruments by Jeckel the *Kapseln* are directly glued to the key levers, and therefore are not adjustable. On the other hand, adjustment is possible between hammer shank and hammer head, which are connected by a brass rod (see fig. 8). In Shrine 5259 and the square piano by Quante the connection between hammer shank and hammer head is rigid, and the *Kapseln* are not glued to the key levers, but are attached and made adjustable by metal rods. In Shrine 5259 this adjustment possibility has been immobilized, probably by the maker, by a little triangular walnut block glued atop each key lever in front of the *Kapsel*. Similar blocks were used by the brothers Johann David and Adam Achatius Schiedmayer in their grand pianos.²⁹ The action of Quante's square piano seems to have been influenced by

27. Washington, Smithsonian Institution, inv. no. 303,542; see van der Meer, "German Clavichords," 103.

28. These include two grand pianos by Jakob Pfister, dating from about 1803 (Münchener Stadtmuseum, 43-421) and from 1805 (Mainfränkisches Museum, Würzburg, 46 456); and a third by Christoph Friedrich Schmahl from 1804 (Germanisches Nationalmuseum, Nuremberg, MINE 100).

29. For example in the grand pianos by Johann David Schiedmayer 1794 (MIR 1102), and by Adam Achatius Schiedmayer 1797 (MIR 1103), both at the Germanisches Nationalmuseum, Nuremberg.

Johann Andreas Stein's *Prellmechanik* with escapement levers:³⁰ both the type of *Kapsel* with felt bushing and the hammer shank form are similar to Stein's action. In its use of a *Prellmechanik* with escapement levers the instrument by Quante represents the most highly-developed stage of square piano building of the time.

Distantly related to this group of square pianos is an unsigned instrument in an unusual pentagonal shape (MMA 89.4.3161) (fig. 14). Because of its massive case construction this instrument seems to have been made in the first decade of the nineteenth century. Its underdampers function in a manner similar to those in Shrine 5259, being pressed against the strings by a horizontal rod from underneath. As in the instrument by Quante, the damper levers and hammer shanks are pivoted in wooden *Kapseln* with felt bushings (fig. 15).

The two square pianos by Jeckel in New York and Halle have bare hammer heads; in the instruments at Yale and Heidelberg leather has been added, presumably later. Jeckel's instrument from 1790 has three stops, which are divided between b and c¹: piano stop (leather or cloth strips are inserted between hammers and strings), harp stop (cloth fringes are lowered onto the strings from above), and dampers (engaged when the stops are operated). These stops offer the same possibilities as Johann Gottlob Wagner's *clavecin royal* from 1775, described in Johann Nicolaus Forkel's *Musikalischer Bibliothek*.³¹ Wagner's *clavecin royal* is, like the square piano by Jeckel from 1790, primarily an undamped instrument with the option of adding individual dampers by operating a hand stop or pedal.³² Jeckel's use of the term *Bandlony*—a transmogrification of the word *Pantalon*—in his instrument from 1790, refers to Pantaleon Hebenstreit's improved hammered dulcimer,³³ and

30. See Koster, *Keyboard Instruments*, 205.

31. Gotha, 1779 (reprint Hildesheim: Georg Olms Verlag, 1964), 322–28.

32. Another primarily undamped square piano with individual dampers, which are engaged by operating a handstop, is the privately-owned instrument by Klein, Emmendingen, 1786. The Poly-Tono-Clavichordium by Johann Andreas Stein, an instrument combining a piano and a harpsichord, was also primarily undamped, although it was equipped with individual dampers: see Michael Latham, "The Pianos of Johann Andreas Stein," *Zur Geschichte des Hammerklaviers*, Michaelsteiner Konferenzberichte 50, ed. Monika Lustig (Michaelstein/Blankenburg: Institut für Auführungspraxis, 1996), 28.

33. Pantaleon Hebenstreit (1667–1750) was active as virtuoso on the hammered dulcimer at the court of Dresden from 1714 to 1733. He became very famous and influential in the development of the early piano in Germany by using an improved type of hammered dulcimer (see Alfred Berner, "Hebenstreit," *Die Musik in Geschichte und Gegenwart*, ed. Friedrich Blume, vol. 6 (Kassel: Bärenreiter, 1957), cols. 3–6.

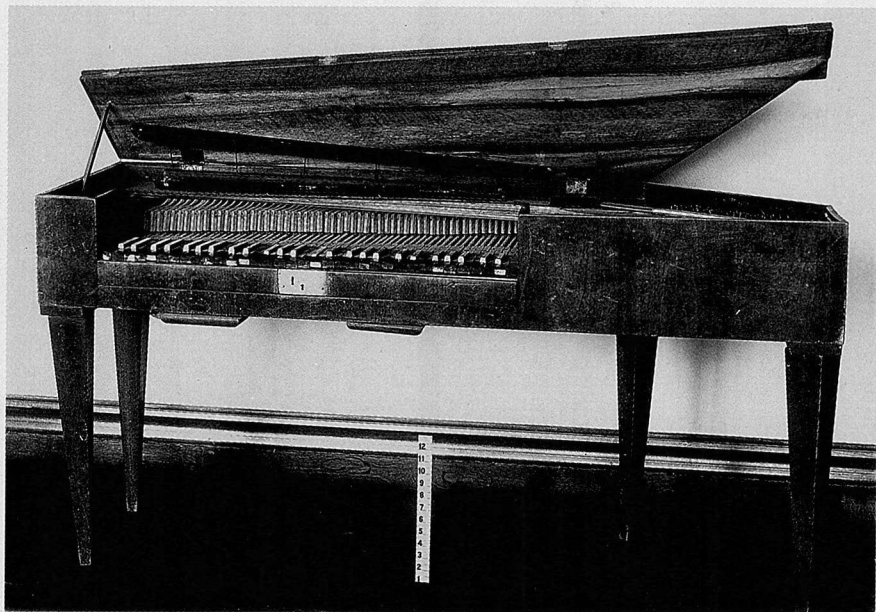


FIGURE 14. Unsigned pentagonal piano. The Metropolitan Museum of Art, New York, 89.4.3161. Photo: MMA.

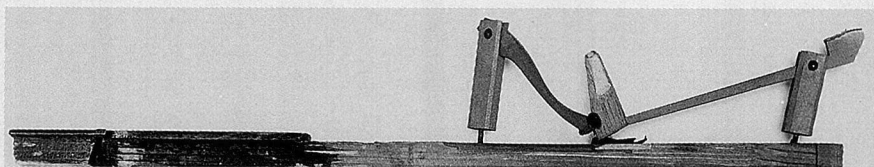


FIGURE 15. Unsigned pentagonal piano, key lever with hammer and damper. The Metropolitan Museum of Art, New York, 89.4.3161. Photo: MMA.

deliberately emphasizes the undamped sound of his instrument, which offers the player only the possibility of adding individual dampers. This becomes clear when one takes into consideration that his totally damperless square piano from 1784 at Yale (4960.00) shows just the indefinite word *Clavier* on its label, not indicating any particular detail of construction. The imitation stops of Jeckel's *Bandlony* could be interpreted as follows:

1. Instrument without use of a register: imitation of a hammered dulcimer with bare mallets.
2. Instrument with single dampers: harpsichord.

3. Instrument with harp stop: harp.
4. Instrument with piano stop: hammered dulcimer with padded mallets.
5. Instrument with harp stop and piano stop: lute.
6. Instrument with piano stop and single dampers: pianoforte.

The harp stop of Jeckel's instrument from 1790 consists of two oak frames onto which the cloth fringes are glued. These frames are hinged on top of the hitch-pin plank (see fig. 10). Presumably original white leather strips, serving as a piano stop, are preserved in the Jeckel square piano from 1784 at Yale. Characteristic of Jeckel's instruments is the neatly made lever system by which the registers are operated (fig. 16). Jeckel's square pianos have hand stops, not knee levers or pedals like the instruments by Wagner. The hand stops are arranged in the front wall, and are operated by pulling forward, like organ stops.

Harpichord and grand piano scaling differs considerably. Harpsichord strings have to be rather thin and long-scaled to enable the quill

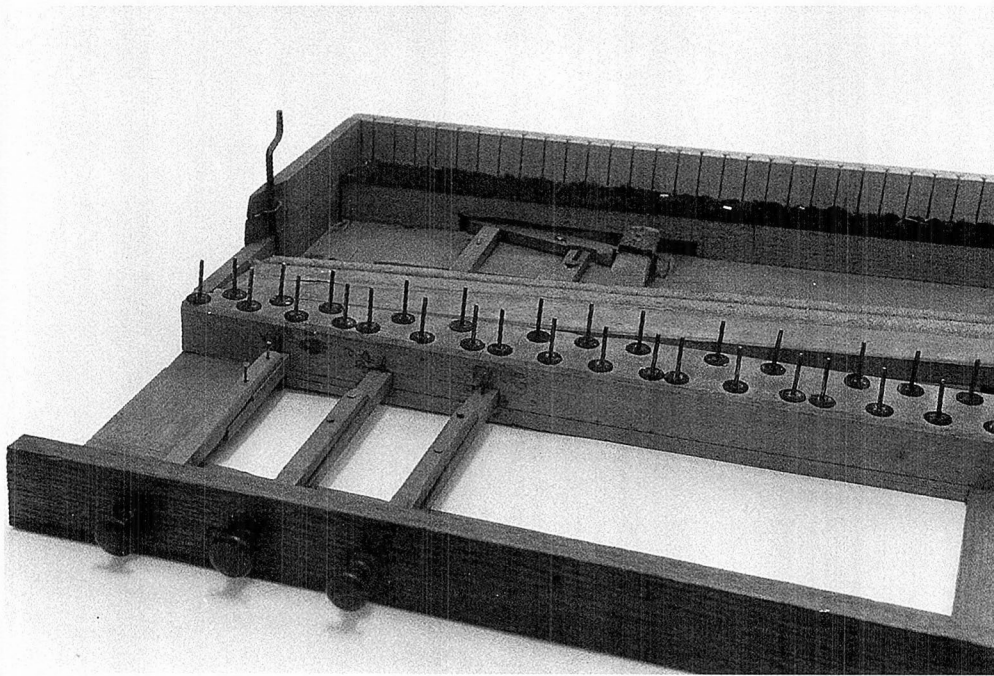


FIGURE 16. Square piano by Johann Christoph and Christian Jeckel, showing key frame with lever system for the registers. The Metropolitan Museum of Art, New York, 89.4.3552. Photo: Sabine Klaus.

to set the string in motion, whereas piano strings have to be relatively thicker to withstand the striking of the hammer. As clavichord strings also have to be relatively thicker than harpsichord strings to resist the force of the tangent,³⁴ the requirements for scaling were similar when a clavichord maker had to construct a square piano.

The square pianos discussed here are double strung throughout, with string lengths and striking points as shown in Table 2. A c^2 speaking length of 316 to 339 mm, as found in these square pianos, would be unusually long for clavichords. However, John Koster has pointed out that some late eighteenth-century German and Swedish clavichords have a c^2 scaling of about 315 to 335 mm,³⁵ and has showed that these clavichords were strung in iron in the treble instead of using brass stringing throughout the compass, as was usual in clavichords with c^2 speaking lengths of 250 to 275 mm. Therefore, one can assume that all square pianos of the group discussed here were strung in iron in the treble, using contemporary clavichord scaling. The square piano by Quante and Shrine 5259 are close to Pythagorean scaling between c^2 and c^3 . In the instruments by Jeckel scaling becomes relatively longer in the treble, perhaps taking advantage of the increased tensile strength of thinner iron strings.³⁶ Koster has observed the same scaling principle in iron-strung

TABLE 2. String lengths and striking points for the longer string per note in millimeters

	Yale 4960.00 (Jeckel 1784)	Halle MS 1 (Jeckel 1784)	MMA 89.4.3552 (Jeckel 1790)	MFA 1977.62 (Quante)	Shrine 5259 (unsigned)
FF	—	1337 (122)	1334 (104)	1481 (83)	1354 (80)
C	1207 (89)	1215 (98)	1210 (80)	1308 (85)	1175 (83)
c	900 (68)	930 (77)	911 (63)	979 (73)	893 (74)
c^1	602 (62)	619 (68)	596 (56)	604 (53)	592 (59)
c^2	333 (45)	339 (55)	326 (40)	319 (27)	316 (41)
c^3	176 (37)	174 (45)	171 (35)	162 (20)	155 (21)
f^3	129 (38)	124 (42)	124 (27)	118 (29)	111 (20)

34. John Koster, "The Stringing and Pitches of Historical Clavichords," *De Clavicordio: Proceedings of the International Clavichord Symposium*, ed. Bernard and Susan Brauchli and Alberto Galazzo (Torino: Istituto per i Beni Musicali in Piemonte, 1994), 228.

35. Koster, "Stringing and Pitches," 232. The long scaling of 335 mm is found in a clavichord by Mathias Schautz, Augsburg, 1793, Germanisches Nationalmuseum (MINE 67).

36. Tensile strength of an iron string increases the thinner it becomes, as it has been drawn through the drawing plate more often. See Martha Goodway and Jay Scott Odell, "The Metallurgy of 17th- and 18th-Century Music Wire," *The Historical Harpsichord 2* (Stuyvesant, N.Y.: Pendragon Press, 1987), 60–62.

clavichords.³⁷ Therefore, in this group of square pianos not only details of case construction but also important characteristics of scaling have been taken over from the clavichord.

Table 3 shows that the striking point percentages of these square pianos are not particularly low and do not support the attempt to produce a bright sound, which is sought instead by using bare hammer heads. Continually rising striking point percentages in the treble can be observed in many eighteenth- and early nineteenth-century square pianos,³⁸ and might have been used in an attempt to make the treble less brittle. In addition, if the treble-most hammers were to strike closer to the end of the string they would be too close to the hitch-pin plank.

TABLE 3. Percentage of striking point in relation to string length

	Yale 4960.00 (Jeckel 1784)	Halle MS 1 (Jeckel 1784)	MMA 89.4.3552 (Jeckel 1790)	MFA 1977.62 (Quante)	Shrine 5259 (unsigned)
FF	—	9.1	7.8	5.6	5.9
C	7.4	8.1	6.6	6.5	7.1
c	7.6	8.3	6.9	7.5	8.3
c ¹	10.3	11.0	9.4	8.8	10.0
c ²	13.5	16.2	12.3	8.5	13.0
c ³	21.0	25.9	20.5	12.4	13.6
f ³	29.5	33.9	21.8	24.6	18.0

Square Piano Building in Nuremberg

Although Nuremberg was for centuries a leader in brass and woodwind instrument making and music wire production, little is known about makers of stringed keyboard instruments in this city. It obviously did not have the importance of Antwerp for harpsichord building in the sixteenth and seventeenth centuries, nor the significance of Vienna or London as centers for piano production in the eighteenth and early nineteenth centuries. However, stringed keyboard instruments were built as a sideline by organ makers in Nuremberg as elsewhere. One early example is a spinet made in 1596 by the organ maker Lorenz Haußlaib as part of a claviorganum now at The Metropolitan Museum

37. Koster, "Stringing and Pitches," 17.

38. Klaus, "Studien zur Entwicklungsgeschichte besaiteter Tasteninstrumente," vol. 1, *Quellen und Studien zur technischen Entwicklung* (Tutzing: Hans Schneider, 1997), 142.

of Art, New York (89.4.1191).³⁹ In addition, only the lid has survived from a spinet made by Paul Wißmaier, which was likewise combined with an organ. Wißmaier was active in Nuremberg from about 1605 until his death in 1623.⁴⁰ Production of less ambitious stringed keyboard instruments became a more significant activity for Nuremberg organ builders in the second half of the eighteenth century, when the city began to lose its importance and financial strength, leading finally to its integration into Bavaria in 1806 and to the end of its independence.⁴¹

From this period we know the names of several stringed keyboard instrument makers, including Johann Christoph Kittelmann (1697–1777), who was employed as city organ maker in 1755,⁴² and is known to have built a clavichord with *Pantolon* stop;⁴³ Christoph Bodechtel (1734–1788), employed as city organ maker in 1772,⁴⁴ of whom a “Pantolon with hammers of soft wood” [*Pantolon mit Hämmern in weichen Holtz*] was listed in a Nuremberg inventory of musical instruments from 1775;⁴⁵ and his son Johann Jacob Bodechtel (1768–1831), city organ maker from 1788.⁴⁶ In 1791 the journal *Von fränkischen Künstlern und Kunstsachen* mentions that Johann Jacob Bodechtel built excellent grand pianos, square pianos, and clavichords.⁴⁷ One of Bodechtel’s pupils was Johann Friedrich Julius Schneider (1765–1849), who worked for the organ and instrument maker Franz Zettler

39. Jürgen-Peter Schindler, *Der Nürnberger Orgelbau des 17. Jahrhunderts* (Michaelstein/Blankenburg: Institut für Aufführungspraxis, 1991), 32.

40. Andreas Tacke, “Der Behaimsche Spinettdeckel von 1619: Zu einem hochrangigen kulturgeschichtlichen Zeugnis der Nürnberger Barockzeit,” *Der “schöne” Klang: Studien zum historischen Musikinstrumentenbau in Deutschland und Japan unter besonderer Berücksichtigung des alten Nürnberg*, ed. Dieter Krickeberg (Nürnberg: Germanisches Nationalmuseum, 1996), 143–57.

41. Theodor Wohnhaas, “Nürnberger Klavierbauer in der ersten Hälfte des 19. Jahrhunderts,” *Mitteilungen des Vereins für Geschichte der Stadt Nürnberg* 54 (1966): 145–57.

42. Jürgen-Peter Schindler, *Die Nürnberger Stadtorgelmacher und ihre Instrumente* (Nürnberg: Germanisches Nationalmuseum, 1995), 37.

43. Elfrid Gleim, “Die Musikinstrumentensammlung des Leonhard Paul Grundler: Eine Quelle zur Situation des Musikinstrumentenhandels in Nürnberg um 1775,” *Der “schöne” Klang: Studien zum historischen Musikinstrumentenbau in Deutschland und Japan unter besonderer Berücksichtigung des alten Nürnberg*, ed. Dieter Krickeberg (Nürnberg: Germanisches Nationalmuseum, 1996), 190.

44. Schindler, *Nürnberger Stadtorgelmacher*, 37.

45. Gleim, “Die Musikinstrumentensammlung des L. P. Grundler,” 177.

46. Schindler, *Nürnberger Stadtorgelmacher*, 38.

47. Hermann Fischer and Theodor Wohnhaas, “Die Nürnberger Orgelbauer Bodechtel,” *Musik in Bayern* 50 (1995): 23.

(ca. 1742–1810) in Kitzingen before coming to Nuremberg.⁴⁸ Schneider is recorded in the house number *S 733* (formerly Panierstraße, today Schildgasse 49/Tetzelgasse 16) from 1819 to 1846,⁴⁹ and the *Nürnbergischer Handelsschematismus*, a trade book, lists his shop as *Fortepiano und Klavierfabrik* in the year 1819.⁵⁰ Another Nuremberg organ maker involved in piano production was Gottlob Emanuel Hufner (ca. 1750–1818).⁵¹ Hufner called himself *Landorgelmacher*,⁵² indicating that he worked for customers outside the city walls. He is recorded as the owner of the house number *S 1306* (today Hirschelgasse 15) from 1798 to 1815.⁵³ Johann Georg Kuppler, a nephew and pupil of Johann Andreas Stein, settled in Nuremberg in 1789,⁵⁴ and in 1797 the famous piano builder Johann David Schiedmayer (1753–1805) moved from Erlangen to Nuremberg.⁵⁵

One of the oldest known Nuremberg square pianos is by Georg Friedrich Trautner (1747–1813), bearing the inscription *G. F. Trautner, Wendelstein bey Nürnberg, Num. 137*. It is now kept at the Orgelbaumuseum Schloß Hanstein, Ostheim an der Rhön. Jürgen-Peter Schindler has shown that this instrument resembles closely the square piano part of the 1772 claviorganum by Adrien L'Épine illustrated by Dom Bedos de Celles, and might have been built around 1790.⁵⁶

There are at least three signed square pianos of Nuremberg origin in the U.S.A. Two of these are at the Smithsonian Institution in Washington, D.C., one by Gottlob Emanuel Hufner (SI 332,175) (figs. 17 and 18), and

48. Wohnhaas, "Nürnberger Klavierbauer," 148.

49. Stadtarchiv Nürnberg, Adreßbücher, 1819 to 1846.

50. Wohnhaas, "Nürnberger Klavierbauer," 148.

51. *Ibid.*, 232. He is also recorded with the spelling *Häfner*, *Hafner*, *Hüffner*, and *Rüfner*. See also Hermann Fischer and Theodor Wohnhaas, "Sieben Jahrhunderte Nürnberger Orgelbau," *Der "schöne" Klang: Studien zum historischen Musikinstrumentenbau in Deutschland und Japan unter besonderer Berücksichtigung des alten Nürnberg*, ed. Dieter Krickeberg (Nürnberg: Germanisches Nationalmuseum, 1996), 161.

52. Hermann Fischer and Theodor Wohnhaas, *Lexikon süddeutscher Orgelbauer* (Wilhelmshaven: Florian Noetzel, 1994), 175.

53. Stadtarchiv Nürnberg, Adreßbücher, 1798 to 1815.

54. Donald H. Boalch, *Makers of the Harpsichord and Clavichord 1440–1840*, ed. Charles Mould (3rd ed., Oxford: Clarendon Press, 1995), 111.

55. Martha Novak Clinkscale, *Makers of the Piano 1700–1820* (Oxford: Oxford University Press, 1993), 240.

56. Jürgen-Peter Schindler, "Das Nürnberger Tafelklavier von Georg Friedrich Trautner, das älteste bekannte Nürnberger Klavier," unpublished lecture given on November 12, 1993, at the 14. Musikinstrumentenbau-Symposium *Zur Geschichte des Hammerklaviers*, held at the Institut für Aufführungspraxis Michaelstein; cf. Dom Bedos de Celles, *L'Art du facteur d'orgues*, pl. 130.

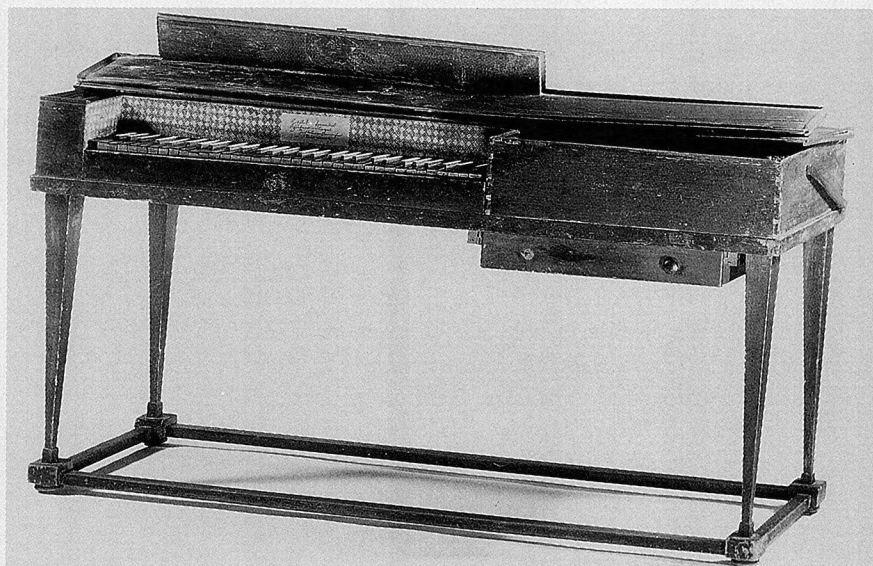


FIGURE 17. Square piano by Gottlob Emanuel Hüfner, Nuremberg. Smithsonian Institution, National Museum of American History, Washington, D.C., 332,175. Photo: SI.

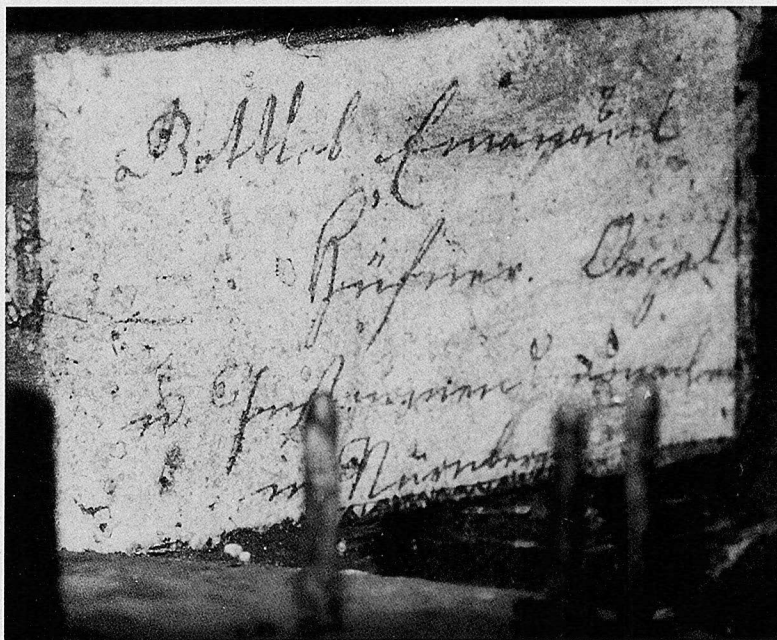


FIGURE 18. Signature of Gottlob Emanuel Hüfner. Smithsonian Institution, National Museum of American History, Washington, D.C., 332,175. Photo: Sabine Klaus.

one by Johann Friedrich Julius Schneider (SI 303,539) (figs. 19 and 20); another square piano by Schneider is part of the Yale University Collection of Musical Instruments in New Haven (inv. no. 4962.00).⁵⁷ An

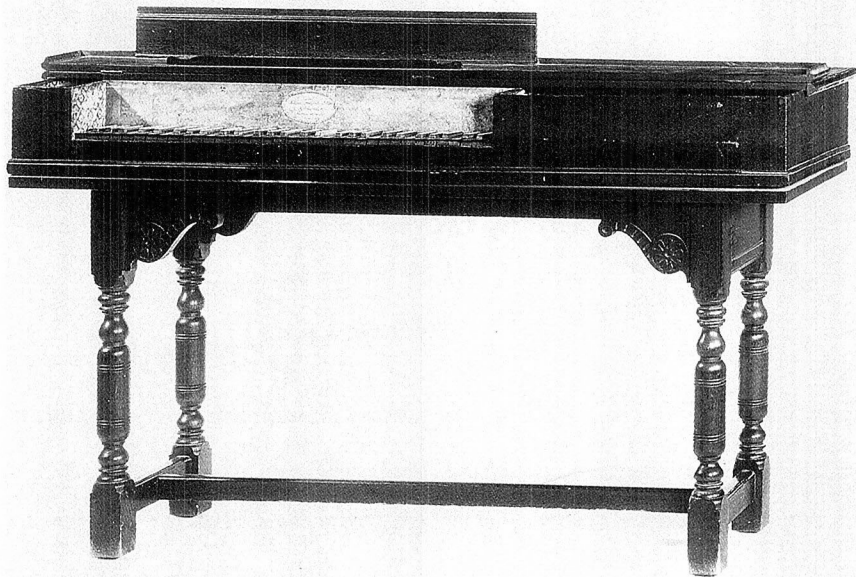


FIGURE 19. Square piano by Johann Friedrich Julius Schneider, Nuremberg. Smithsonian Institution, National Museum of American History, Washington, D.C., 303,539. Photo: SI.



FIGURE 20. Signature of Johann Friedrich Julius Schneider. Smithsonian Institution, National Museum of American History, Washington, D.C., 303,539. Photo: SI.

57. Wohnhaas, "Nürnberger Klavierbauer," 148. The author unfortunately was not able to see this instrument, which is therefore not included in the following discussion.

unsigned square piano with no evidence of provenance on the instrument itself, but described in the museum's records as being from Nuremberg, is found at The Metropolitan Museum of Art (89.4.1197) (fig. 21).⁵⁸ It is certainly neither by Schneider nor Hufner nor influenced by their style, and its Nuremberg provenance is questionable at best. Nevertheless, in a broader sense it belongs to the same group of instruments and is therefore briefly discussed here.

The square pianos by Schneider and Hufner and MMA 89.4.1197 have a *Prellmechanik* without escapement in combination with an overdampener system consisting of one-armed damper levers acting on the strings from above, as shown in fig. 1. Their case construction is similar to the instruments described previously. In the instruments by Schneider and Hufner the wrest plank is angled and covered by the soundboard (figs. 22 and 23).

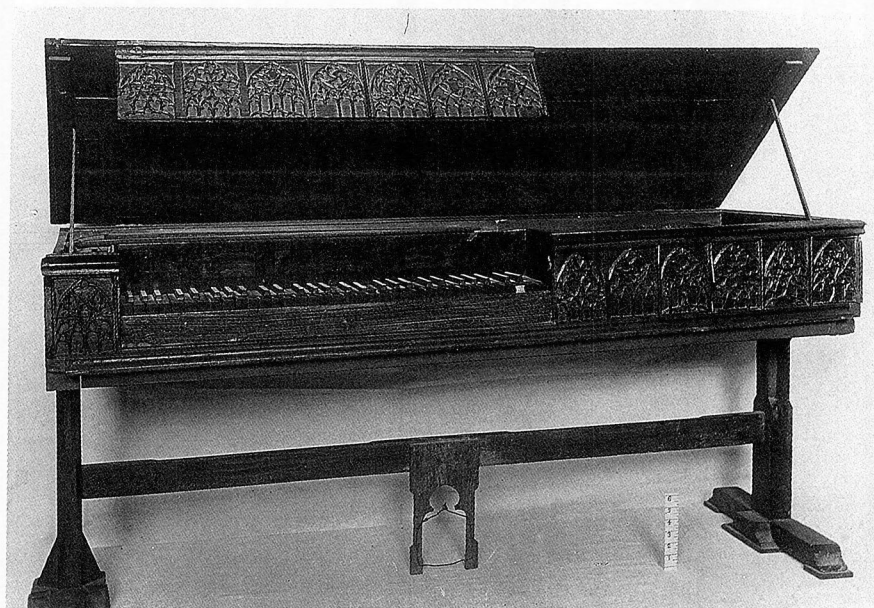


FIGURE 21. Unsigned square piano. The Metropolitan Museum of Art, New York, 89.4.1197. Photo: MMA.

58. Its Nuremberg provenance is already mentioned in the museum's catalogue from 1904, *The Crosby Brown Collection of Musical Instruments of All Nations, Catalogue of Keyboard Instruments* (New York: The Metropolitan Museum of Art, 1904), 132–35. A search for clues supporting this provenance in the correspondence of Mrs. John Crosby Brown, preserved at The Metropolitan Museum of Art, was not successful.

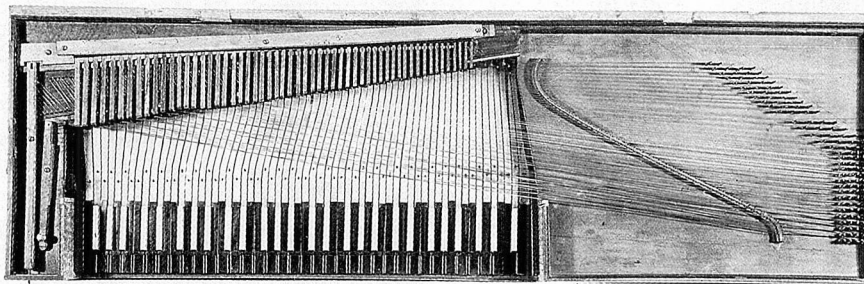


FIGURE 22. Square piano by Gottlob Emanuel Hufner. Smithsonian Institution, National Museum of American History, Washington, D.C., 332,175. Photo: SI.

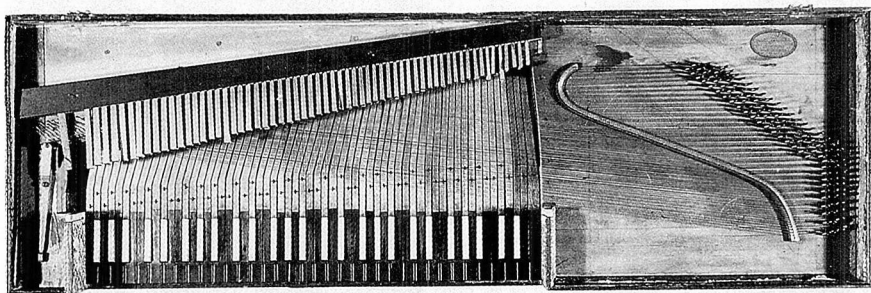


FIGURE 23. Square piano by Johann Friedrich Julius Schneider. Smithsonian Institution, National Museum of American History, Washington, D.C., 303,539. Photo: SI.

All three square pianos follow clavichord iron scaling in the treble (see Table 4). Pythagorean scaling can be observed in the square piano by Hufner and in MMA 89.4.1197. By contrast, in the square piano by Schneider the scaling becomes relatively shorter in the treble after a peak at c^2 . Although this contradicts the principle of increasing tensile strength of thinner iron strings, such scaling is often found in square pianos of the late eighteenth and early nineteenth centuries.⁵⁹ Again, one can observe continually rising striking point percentages from bass to treble.

59. Klaus, *Quellen und Studien*, 137.

TABLE 4. String lengths and striking points for the longer string per note in millimeters

	SI 303.539 (Schneider)	SI 332.175 (Hüfner)	MMA 89.4.1197 (unsigned)
FF	1325 (71)	1405 (—)	1378 (98)
C	1198 (70)	1225 (77)	1217 (72)
c	922 (63)	882 (83)	905 (57)
c ¹	600 (56)	560 (70)	590 (40)
c²	319 (45)	316 (53)	327 (28)
c ³	150 (32)	158 (45)	164 (16)
f ³	105 (27)	110 (53)	119 (14)

As all action parts except the dampers are mounted on the key levers, the square pianos by Hüfner and Schneider dispense with key frames. In both instruments the key levers' ends are guided by lateral brass pins, and the key dip is stopped by either the *Kapsel* or the hammer shank hitting the underside of the *Prelleiste*. As in the instruments by Jeckel, the key stop and the initiator of the hammer motion are therefore combined in one constructional element.

Several characteristics of the keys, action, and damper parts of Schneider's and Hüfner's square pianos are very similar. This leads to the conjecture that both men might have been trained by the same master, have worked together at some time, or at least have known each other's work. Both square pianos have oblong, flat *Kapseln* glued to the key levers (figs. 24 and 25). The hammer shanks consist of a flat wooden part, ending in a long iron rod for attachment of the hammer head. A particular feature common to the square pianos by Schneider and Hüfner is the method of guiding the damper levers. In German square pianos one-armed damper levers are most often pivoted by a single horizontal wire for all damper levers, and guided through a comb-like rack.⁶⁰ In the instruments by Schneider and Hüfner, however, every single damper lever has its own pivot at the center of its rear end (figs. 26 and 27). The advantage of this system is that each damper lever can be taken out separately for repair, simply by lifting the top ledge which covers all the damper levers to keep them in place. This system is also found in the piano part of the claviorganum by Adrien L'Épine.⁶¹

60. *Ibid.*, 247.61. Dom Bedos de Celles, *L'Art du facteur d'orgues*, pl. 130.

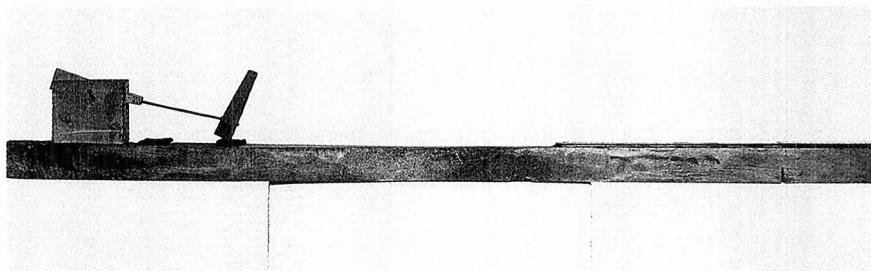


FIGURE 24. Key lever with hammer of the square piano by Gottlob Emanuel Hufner. Smithsonian Institution, National Museum of American History, Washington, D.C., 332,175. Photo: SI.

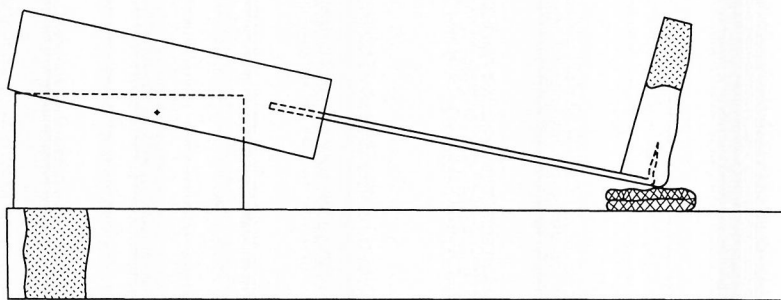


FIGURE 25. Hammer form of the square piano by Johann Friedrich Julius Schneider. Smithsonian Institution, National Museum of American History, Washington, D.C., 303,539. Drawing: Sabine Klaus, computerized version by John Watson.

Another element shared by Schneider and Hufner is the way the key levers are cut away for the protruding damper-lifter felts of each adjacent key lever (figs. 28 and 29). This feature is found in some grand pianos by Johann Andreas Stein,⁶² and, more importantly, in a square piano by Schneider's teacher Johann Jacob Bodechtel from 1802.⁶³

62. Sabine Matzenauer, "Zur Restaurierung eines Piano-Fortes von J. A. Stein: Erhaltene Instrumente im Vergleich," *Zur Geschichte des Hammerklaviers*, Michaelsteiner Konferenzberichte 50, ed. Monika Lustig (Michaelstein/Blankenburg: Institut für Aufführungspraxis, 1996), 56.

63. I am very grateful to Klaus Martius for all the information and the photos on this square piano, which is privately owned in Nuremberg.



FIGURE 26. Damper pivots of the square piano by Gottlob Emanuel Hufner. Smithsonian Institution, National Museum of American History, Washington, D.C., 332,175. Photo: Sabine Klaus.

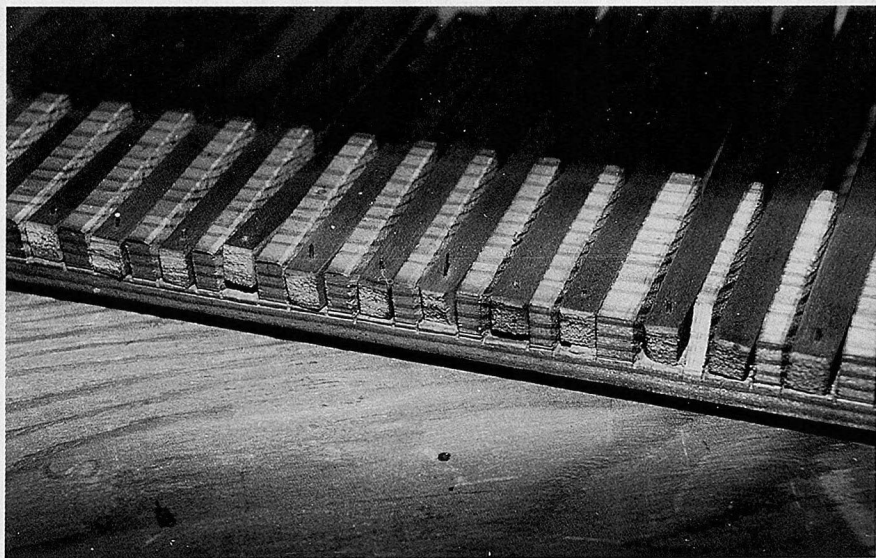


FIGURE 27. Damper pivots of the square piano by Johann Friedrich Julius Schneider. Smithsonian Institution, National Museum of American History, Washington, D.C., 303,539. Photo: Sabine Klaus.

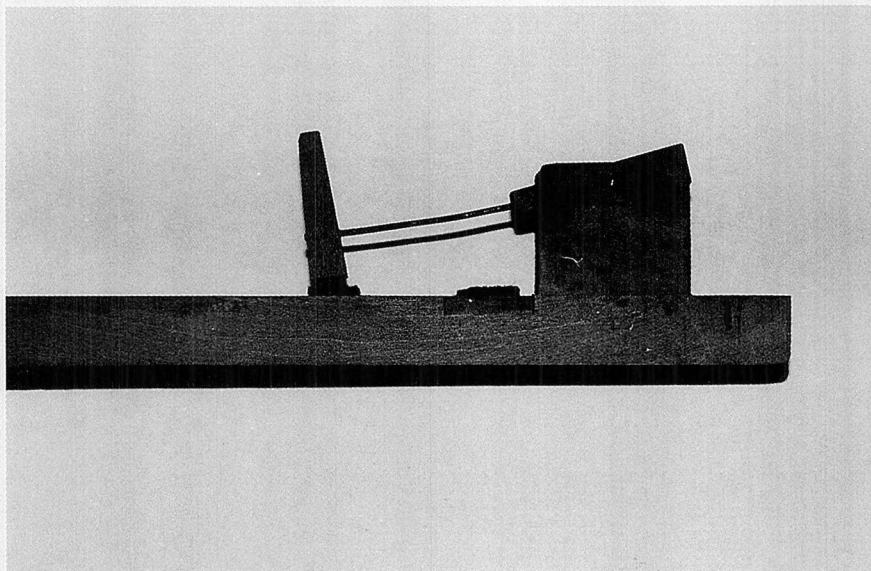


FIGURE 28. Cut-out of the key lever of the square piano by Gottlob Emanuel Hüfner. Smithsonian Institution, National Museum of American History, Washington, D.C., 332,175. Photo: Sabine Klaus.

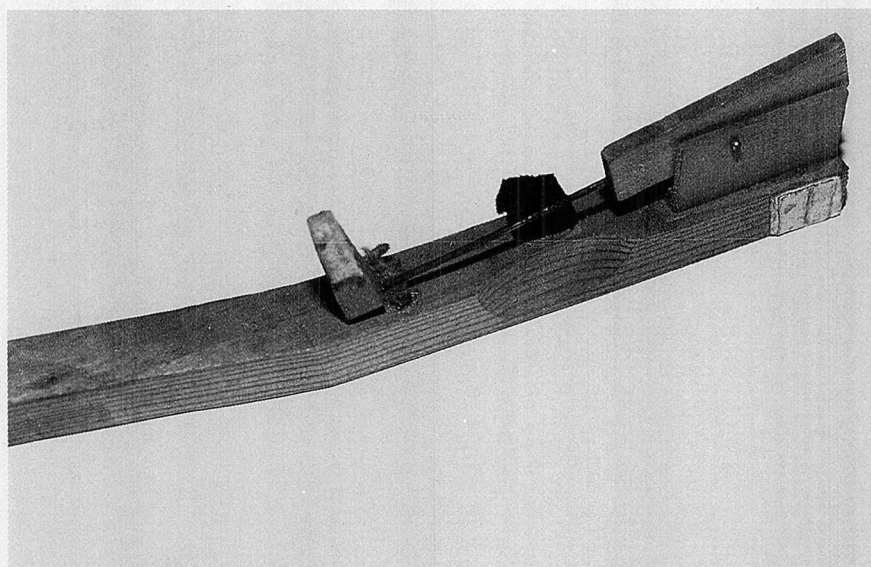


FIGURE 29. Cut-out of the key lever of the square piano by Johann Friedrich Julius Schneider. Smithsonian Institution, National Museum of American History, Washington, D.C., 303,539. Photo: Sabine Klaus.

However, although the square pianos by Bodechtel⁶⁴ share principal constructional details with the instruments by Schneider and Hühner, such as the overdampers (fig. 30) and the basic construction of the *Prellmechanik* (fig. 31), they differ in details, for example in Bodechtel's use of parchment pivots for the damper levers instead of central pins, and different forms of hammer shank pivots, consisting not of normal *Kapseln*, but rather of triangular blocks on top of which the hammers are mounted (see fig. 31). Nevertheless, it seems to be justifiable to talk about a small school of Nuremberg square piano building.

Comparison of the two square pianos by Hühner and Schneider offers some help in developing criteria for distinguishing between originally

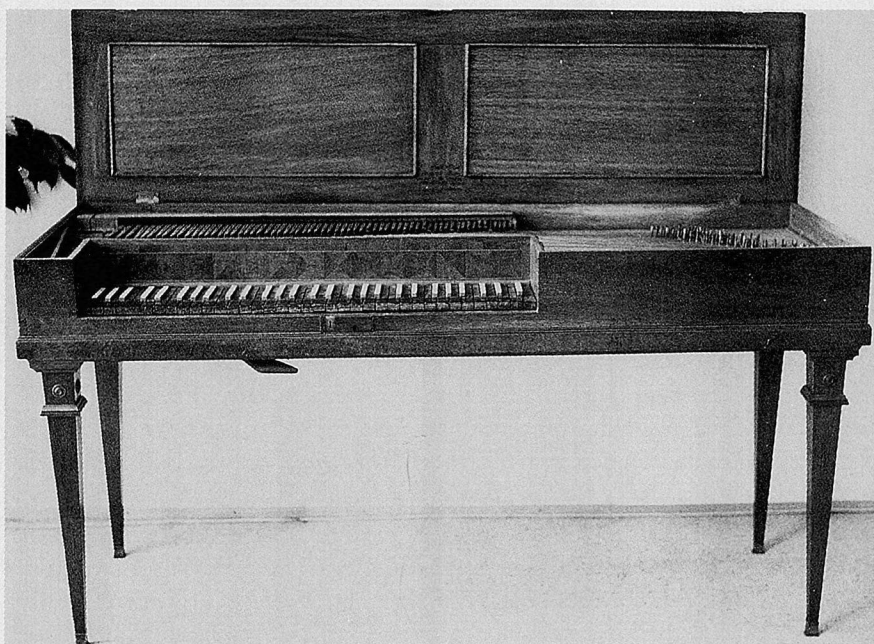


FIGURE 30. Square piano by Johann Jacob Bodechtel, Nuremberg, 1802. Privately owned in Nuremberg. Photo: Klaus Martius.

64. A second square piano by Bodechtel from 1801 is preserved at the Germanisches Nationalmuseum, Nürnberg, MIR 1144. I am thankful to Klaus Martius for information and photos on this instrument, too. A clavichord signed *Johann Jacob Bodechtel* is privately owned in Canada (see Boalch, *Makers of the Harpsichord and Clavichord*, 247).

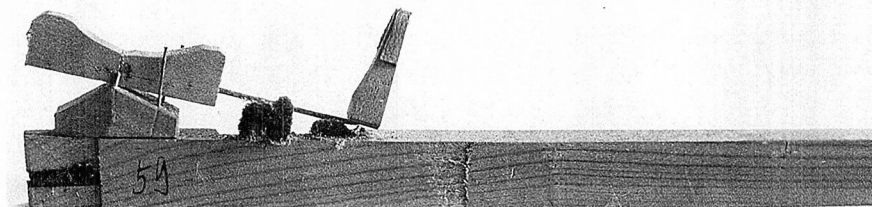


FIGURE 31. Key lever with hammer of the square piano by Johann Jacob Bodechtel, 1802. Privately owned in Nuremberg. Photo: Klaus Martius.

bare and covered hammer heads. The instrument by Hűfner has bare hammer heads in connection with a piano stop. This piano stop has probably original hook-shaped brown leather strips, which can be inserted between hammer heads and strings by a hand stop to the left of the keyboard (see fig. 22). The square piano by Schneider has no piano stop, but does have a buff stop with which the sound of the strings can be softened when they are touched with a leather strip from underneath (fig. 32). This causes an effect similar to that of the buff stop in harpsichords. The hammer heads of Schneider's instrument have remnants of probably original leather below replacement leather. Therefore, one could formulate the tentative rule that the absence of a piano stop could be a clue that the hammer heads were originally covered, whereas the presence of a piano stop in square pianos always offers the possibility of originally bare hammer heads.

We know from archival sources that Hűfner was considered a rather poor craftsman.⁶⁵ This is supported by certain details in his square piano at the Smithsonian Institution. Schneider made the key lever cut-outs for the damper-lifter felts in the form of very neat and regular rounded grooves in every key lever (see fig. 29). In Hűfner's square piano these cut-outs are done less carefully, and are not always present in the treble. Hűfner obviously cut them just at places where they were absolutely necessary, and did not use them as a production step as Schneider did. Further, for several parts of his instrument Hűfner used damaged wood or even two different kinds of wood: for example, fruit-

65. Stadtarchiv Nűrnberg, Rugamt 1788: "... Hűfner is a notoriously bad craftsman . . ." ["... der Hűfner notorisch ein gar schlechter Kűnstler sei . . ."]. This information was kindly provided by Klaus Martius.

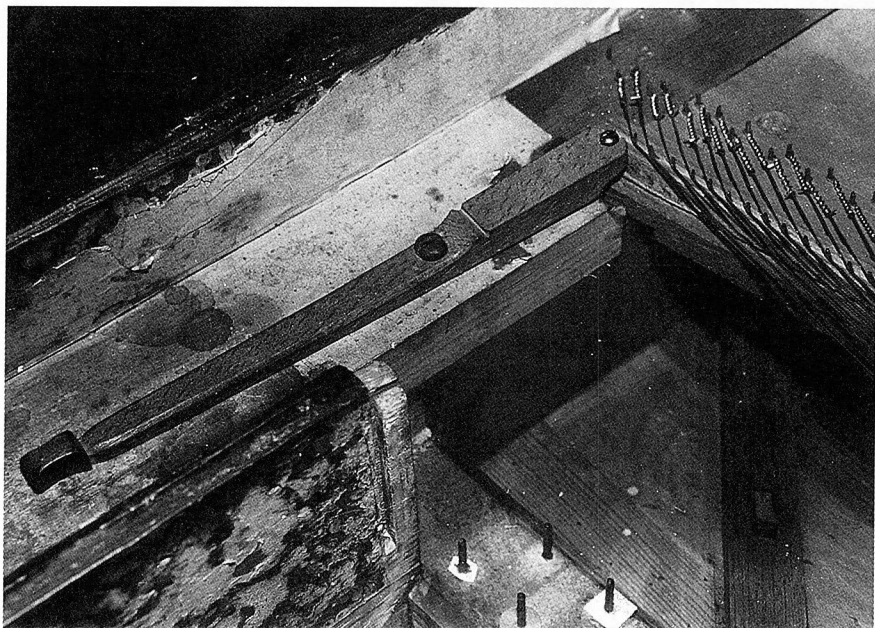


FIGURE 32. Buff stop of the square piano by Johann Friedrich Julius Schneider. Smithsonian Institution, National Museum of American History, Washington, D.C., 303,539. Photo: Sabine Klaus.

wood and walnut hammer heads of absolutely identical workmanship are found randomly distributed within the instrument, leading to the conclusion that both kinds were made by Hűfner himself. Damaged wood is used for the top layer of the balance rail (fig. 33), which is put together from two pieces of wood, as is also the ledge for the key guiding pins (fig. 34). In the latter case the added piece provides the extra length needed to extend the ledge from an FF to f^3 compass to the FF to g^3 compass actually found on Hűfner's square piano. Probably Hűfner normally built instruments with a compass of FF to f^3 and kept key guiding ledges of that size in stock, one of which he lengthened to serve for an FF to g^3 compass. Hűfner's natural key levers show careless workmanship, having been cut deeper than necessary when the sharps were separated from the naturals (fig. 24). At first sight all this seems to be bad repair work, but turns out to be original and moreover sensible for a rather cheap, economically built instrument.

The two square pianos by Gottlob Emanuel Hűfner and Johann Friedrich Julius Schneider might have been built in the last fifteen years



FIGURE 33. Balance rail of the square piano by Gottlob Emanuel Hüfner. Smithsonian Institution, National Museum of American History, Washington, D.C., 332,175. Photo: Sabine Klaus.

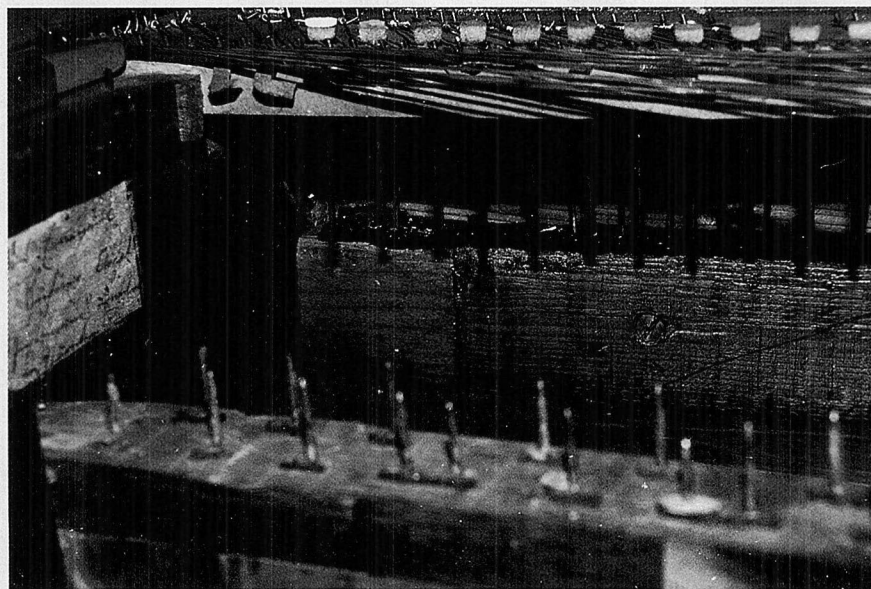


FIGURE 34. Balance rail and ledge for rear key guiding pins of the square piano by Gottlob Emanuel Hüfner. Smithsonian Institution, National Museum of American History, Washington, D.C., 332,175. Photo: Sabine Klaus.

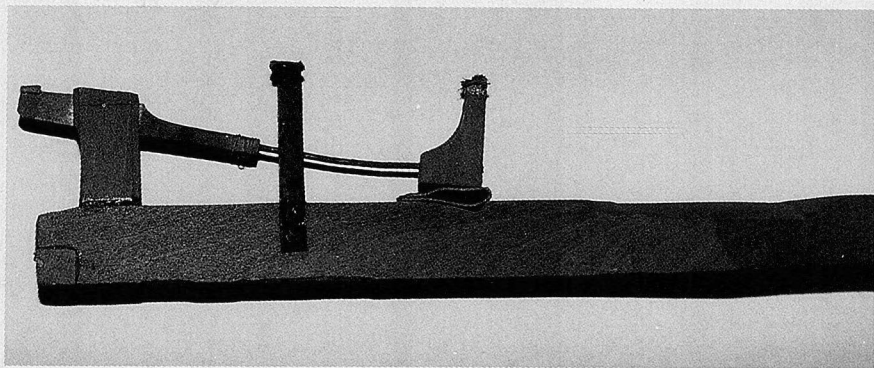


FIGURE 35. Key lever with action, and tangent-like damper-lifter of the unsigned square piano. The Metropolitan Museum of Art, New York, 89.4.1197. Photo: Sabine Klaus.

of the eighteenth century because of their use of hand stops, a wrest plank which is totally covered by soundboard wood, and the lack of a key frame. These features are found in dated instruments by Johann Christoph Jeckel from 1784 onwards, and the latter two are still present in the square piano by Johann Jacob Bodechtel from 1802.

Although MMA 89.4.1197 belongs to the same type of square piano as Hufner's and Schneider's, the specific features of these two makers are absent. But MMA 89.4.1197 shows some very distinctive characteristics which might make it possible in the future to attribute the instrument to a certain school or even a particular maker, if signed and dated square pianos with such features are found. These quite uncommon elements are key guiding by central brass back pins instead of the usual lateral back pins,⁶⁶ and damper lifters made of sheet brass similar to clavichord tangents (fig. 35).

Square Piano Building in and Influenced by Augsburg

The most famous piano builder in eighteenth-century Augsburg was Johann Andreas Stein (1728–1792), whose reputation rests primarily on his contribution to the development and production of grand pianos. But we should not overlook the fact that square pianos with very

66. Key guiding by central wooden slats, rather than metal pins, at the key ends is found in a square piano with *Stoßmechanik*, privately owned near Boston. This instrument, however, belongs to a distinct type of square piano, which will not be discussed here.

simple actions were built by Stein's successors in the late eighteenth and early nineteenth centuries, and indeed probably also in Stein's own workshop, to judge from a list of prices in his notebook, written between 1750 and 1777.⁶⁷ Moreover, a stringing list in the same notebook mentions a *Forte Piano Petit*, which clearly can be interpreted as a square piano;⁶⁸ however, no such instrument seems to have survived.

After Stein's death in 1792, and his children's move to Vienna in 1794, there were three officially-licensed piano makers working in Augsburg: Mathias Schautz (1755–1831),⁶⁹ Franz Joseph Wirth (1760–1819), and Ignace Joseph Senft (1772–1817)⁷⁰ (fig. 36); in addition, from 1796 onwards Leonhard Zauscher (ca. 1752–1834) built pianos without an official licence.⁷¹ Three grand pianos and a clavichord by Mathias Schautz still exist,⁷² but no square piano from his workshop seems to have survived, although it is likely that he made this kind of instrument too. Square pianos are known by Franz Joseph Wirth from 1798 (Deutsches Museum, Munich, 1906-6543⁷³), by Leonhard Zauscher (now at the Musikinstrumenten-Museum, Leipzig, formerly Heyer collection, Cologne, inv. no. 8⁷⁴), and by Ignace Joseph Senft (one at the Musikinstrumenten-Museum, Berlin, inv. no. 1280,⁷⁵ and another at The Metropolitan Museum of Art, inv. no. 89.4.3136). The authenticity of the square piano by Wirth from 1798 has been questioned by Hubert Henkel.⁷⁶ But comparison with other

67. Latham, "The Pianos of Johann Andreas Stein," 19–20.

68. *Ibid.*, 18–22.

69. Inge Hartmann-Bögl, "Der Klavierbauer Mathias Schautz (1755–1831): Ein Beitrag zur Geschichte des Augsburger Klavierbaus (1. Teil)," *Glareana* 45 (1996), 35–40.

70. Hermann Fischer and Theodor Wohnhaas, "Augsburger Klavier- und Orgelbauer im 19. Jahrhundert," *Blätter des Bayerischen Landesvereins für Familienkunde* 36 (1973), 61–62.

71. *Ibid.*, 62. See also the lawsuit of Schautz, Wirth, and Senft against Zauscher, lasting from October 5, 1796, to February 6, 1799 (Stadtarchiv Augsburg, *Instrumentenmacher 1783–1857*, fol. 21, 48–52, 66, and 85–87).

72. Georg F. Senn, "Der Klavierbauer Mathias Schautz (1755–1831) (2. Teil): Die Instrumente," *Glareana* 46 (1997), 3–21.

73. Henkel, *Besaitete Tasteninstrumente*, 206–07.

74. Georg Kinsky, *Musikhistorisches Museum von Wilhelm Heyer in Cöln*, vol. 1, *Besaitete Tasteninstrumente, Orgeln und orgelartige Instrumente, Friktionsinstrumente* (Cöln: Breitkopf & Härtel, 1910), 121.

75. Konstantin Restle, "Zwitterformen bei Claviermechaniken des späten 18. Jahrhunderts: Zu drei Tafelclavieren des Berliner Musikinstrumenten-Museums," *Zur Geschichte des Hammerklaviers*, Michaelsteiner Konferenzberichte 50, ed. Monika Lustig (Michaelstein/Blankenburg: Institut für Aufführungspraxis, 1996), 80–81.

76. Henkel, *Besaitete Tasteninstrumente*, 207.

2 Liebhaber bezuset, wenn ~~er~~ der nämliche
 geschloß Magistrat in ruffen Hallen sitzen würd.

Sind müßten wir nur die unferne Bitte
 widerstehen, daß dem Appellanten seine Pflichten
 genau in unsern Matrik mit der Erfüllung in die
 und kürzeste Kosten einzuhalten, die dazu
 kommt auch sollte Anfallen und Einräumung
 weggelassen, und die beifolgende dazu hochbedeute
 Abrechnung weggelassen werden.

Admit wir unter überausender Zerkn
 zum nützlichsten Teil in größter Gefüh
 lung unfernen,

des geschloß Magistrats,

St. Schantz

unterschiedlich-unfernen

Math. Schantz

Franz Joseph Wirth
 Ignace Joseph Senft

FIGURE 36. Signatures of Mathias Schantz, Franz Joseph Wirth, and Ignace Joseph Senft in a document from February 6, 1799. The document refers to the lawsuit of these makers against Leonhard Zauscher, who built pianos in Augsburg without having an official licence from 1796 onwards. Stadtarchiv Augsburg, *Instrumentemacher 1783–1857*, fol. 87.

extant instruments by Wirth, such as the grand piano dated 1803 presently on loan to the Musikinstrumentenmuseum im Münchner

Stadtmuseum, shows that the signature and date on the square piano of 1798 must be authentic.⁷⁷

Several principal features of construction are shared by Wirth's instrument from 1798 and an unsigned square piano at The Metropolitan Museum of Art, 11.176.4 (fig. 37), although no details of workmanship can be found to justify attributing the latter instrument to Wirth. Both square pianos have the most simple *Prellmechanik* one can imagine (fig. 38). The hammer shank of MMA 11.176.4 consists of a small beech slat with a little maple block glued on top of it, serving as hammer head. As in the square piano by Wirth, the hammer heads are bare. The flat hammer shank is pivoted directly on the key lever by a leather strip. When the key is depressed, the hammer shank's end hits the underside of the over rail, which then serves as *Prelleiste*, causing the hammer head to be thrown against the string. The simplicity of this kind of *Prellmechanik* is closely related to Arnaut de Zwolle's fourth action, depicted to the right of his clavicybalum,⁷⁸ which Restle interpreted as a precursor of the

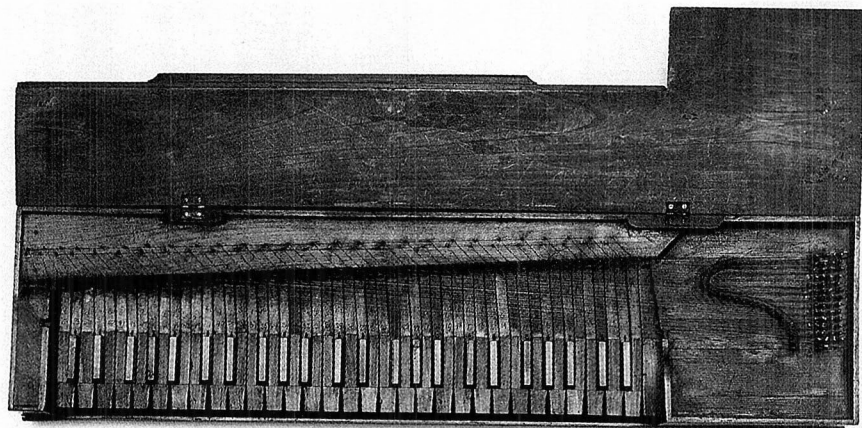


FIGURE 37. Unsigned square piano. The Metropolitan Museum of Art, New York, 11.176.4. Photo: MMA.

77. Wirth's grand piano from 1803 shares with the square piano from 1798 a rounded soundboard edge in combination with a scribe line, and uses the same *Stichmaß* (three-octave span); also, the way the damper levers and hammers are made in the square piano corresponds to the form of the escapement levers in the grand piano, both consisting of flat conifer slats with pearwood blocks.

78. G. Le Cerf and E.-R. Labande, *Les Traités d'Henri-Arnaut de Zwolle et de divers anonymes* (Paris: Auguste Picard, 1932), pl. 6.

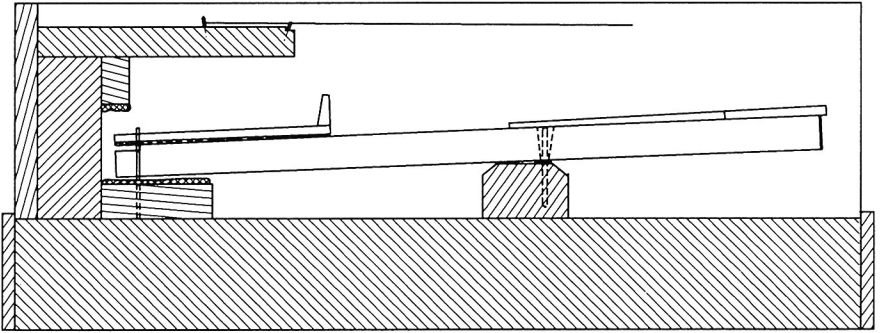


FIGURE 38. Action of unsigned square piano. The Metropolitan Museum of Art, New York, 11.176.4. Drawing: Sabine Klaus, computerized version by John Watson.

Prellmechanik.⁷⁹ In this action the hammer is mounted on the key lever, and is thrown against the string when the key lever's end hits an obstacle, leaving the hammer to continue its motion.⁸⁰ Further basic similarities between MMA 11.176.4 and Wirth's square piano from 1798 include a relatively small compass of C to f³ and the use of single stringing throughout, which results in the tuning pins being arranged in a straight line next to the right side wall (see fig. 37).

The small compass of the square piano with Wirth's signature in the Deutsches Museum, Munich, as well as its tuning pin arrangement and simple action, have been used by Henkel to argue that this instrument must have been made much earlier than 1798, perhaps as early as the 1730s.⁸¹ But clavichords with a compass of C to f³ were built at least until 1804;⁸² and the straight wrest plank arrangement along the right side

79. Konstantin Restle, *Bartolomeo Cristofori und die Anfänge des Hammerlaviers* (Munich: Edition Maris, 1991), 26.

80. Arnaut de Zwolle's action might even have produced a sound similar to that of the square piano MMA 11.176.4, since Arnaut's design used a hard material, probably metal, to strike the string, and he makes no mention of dampers (see Stewart Pollens, *The Early Pianoforte* [Cambridge: Cambridge University Press, 1995], 15), which are also lacking on MMA 11.176.4.

81. Henkel, *Besaitete Tasteninstrumente*, 207. Henkel interprets Wirth's signature as a repair inscription, although no mention of a repair is made. But the way in which this piano is signed, namely inside the soundboard compartment and on a printed label on top of the soundboard, is similar to the manner used by Johann Andreas Stein (for example, in a grand piano from 1790, Musikinstrumentenmuseum im Münchner Stadtmuseum inv. no. 88-13), and may therefore be seen as confirmation of the instrument's end-of-the-century origin in Augsburg.

82. For example a clavichord by Peter Hötzel, Steyer, 1804 (see Boalch, *Makers of the Harpsichord and Clavichord*, 400).

wall is still found in a square piano from 1802 (Münchner Stadtmuseum, 35/2329)⁸³ by Georg Winkler (1767–1843), an instrument maker active in Munich,⁸⁴ and in a similar instrument, dated 1805, by Johann Andreas Mahr, Wiesbaden (Deutsches Museum, Munich, 1909-20781).⁸⁵ These two instruments share not only the compact case dimensions of Wirth's square piano and MMA 11.176.4 but also their use of single stringing, an arrangement which might derive from portable clavichords made for traveling, in which it was used to save space.⁸⁶ Indeed, in Augsburg during the second half of the eighteenth century there seems to have been a tradition of building instruments particularly for traveling purposes: Leopold Mozart bought a portable clavichord from Johann Andreas Stein in 1762 as a practice instrument for his son Wolfgang on their trips throughout Europe.⁸⁷ In this connection it is worth noting that the legs of Johann Andreas Mahr's 1805 square piano, mentioned above, can be folded, strongly suggesting that it was used for traveling purposes, while MMA 11.176.4 does not even have legs. If Wirth's square piano from 1798 and MMA 11.176.4 were in fact intended as traveling instruments, this could explain their very simple actions, which would deliberately have been made with a minimum of moving parts in order to reduce the possibility of damage under potentially adverse conditions.

The action of the square pianos by Georg Winkler and Johann Andreas Mahr, mentioned above, is closely related to the action in Wirth's square piano and MMA 11.176.4. In Winkler's and Mahr's instruments the flat hammer is transformed into an intermediate lever, acting on a hammer which is pivoted as a one-armed lever on the key. The best known maker of this type of action is Ignace Joseph Senft (fig. 39). From the archival source shown in fig. 36, which was signed by both Wirth

83. The date is given as "180II" in the signature of this instrument by Winkler's apprentice Carl Sondhaus. This has been interpreted, probably erroneously, as "1811" by the present author (Klaus, *Tafelklaviere*, 81). The intended date is more likely to be 1802 because of the presence of the "0" followed by the roman numeral "II".

84. Stadtarchiv München, PMB W 257.

85. Henkel, *Besaitete Tasteninstrumente*, 227–28.

86. Some late eighteenth-century clavichords with this construction still exist, for example an unfretted travel clavichord by J. A. Stein from 1787 with the compass C to f³; see Clemens von Gleich, *Harpsichords, Clavichords, Organs, Harmoniums: Checklists of the Musical Instrument Collection of the Haags Gemeentemuseum* (The Hague: Haags Gemeentemuseum, 1989), 54–55. This clavichord also shares the straight wrest plank arrangement with the square pianos under discussion.

87. Eszter Fontana, "Mozarts 'Reiseclavier,'" *Die Klangwelt Mozarts*, ed. Gerhard Stradner (Wien: Kunsthistorisches Museum, 1991), 73–75.

Andreas, Johann Gottfried (1752–1812), and Johann Georg Mahr.⁹¹ Except for the Munich maker Winkler, all of the other instrument builders are known to have had a direct or indirect contact to Augsburg. Schiedmayer worked for Johann Andreas Stein from 1778 to 1781, and Senft settled in Augsburg after Stein's death in 1792.⁹² The only known square piano with this action type by Johann David Schiedmayer bears Johann Gottfried Mahr's signature on the damper rail, which might suggest that he repaired or added the dampers. This instrument was built in Erlangen before 1797, probably even before 1785, as it does not mention Schiedmayer's court appointment, which was in force in 1785.⁹³ There is no instrument by the Mahr family known to the author having this type of action and dated before 1801. It is therefore possible that the Mahrs learned of this kind of action from the instrument by Schiedmayer. Because Senft originally came from Koblenz, not far from the Mahr family's place of residence in Wiesbaden (see fig. 4), the possibility cannot be excluded that the *Prellmechanik* with intermediate lever was known there and was imported by Senft to Augsburg. However, in this case there would be no explanation why this mechanism is also found in the square piano by Schiedmayer,⁹⁴ and why it is so closely related to the action in the square piano by Wirth.

Another aspect seems to suggest that the *Prellmechanik* with intermediate lever in the version shown in fig. 39 might have originated in Augsburg, possibly in Stein's workshop. Stewart Pollens has pointed out that the action by Senft resembles the drawing of Cristofori's hammer action found in Johann Ulrich König's *Musicalische Merckwürdigkeiten*.⁹⁵ Since Stein knew the Cristofori action from König's translation of Scipione Maffei's "Nuova invenzione d'un gravecembalo col piano, e forte"

91. Henkel, *Besaitete Tasteninstrumente*, 227; Konrad Sasse, *Katalog zu den Sammlungen des Händel-Hauses in Halle*, Teil 5, *Musikinstrumentensammlung, besaitete Tasteninstrumente* (Halle an der Saale: Händel-Haus, 1966), 148–49. (Birth and death dates for Johann Andreas and Johann Georg Mahr are unknown.)

92. Fischer and Wohnhaas, *Lexikon süddeutschen Orgelbauer*, 385.

93. See Clinkscale, *Makers of the Piano*, 241. This square piano is now kept at the Württembergisches Landesmuseum, Stuttgart (see *Musikinstrumentensammlung im Fruchtkasten: Begleitbuch* [Stuttgart: Württembergisches Landesmuseum, 1993], 206, cat. no. 19.2).

94. The instrument by Schiedmayer has not yet been examined by the author. Therefore the possibility cannot be totally excluded that Mahr might have added the action later, which would contradict this argument.

95. Pollens, *The Early Piano*, 157 and 159; König's translation was published in Johann Mattheson, *Critica Musica* (Hamburg, 1725; reprint Amsterdam: Knuf, 1964), 2:335–42; the drawing appears on p. 339.

(1711), as is proved by an entry in his notebook,⁹⁶ he might well have been inspired by this drawing to develop the *Prellmechanik* with intermediate lever for his own square pianos, from which it would then have been transmitted to the square pianos by Schiedmayer, the Mahr family, Senft, and Winkler.

This *Prellmechanik* with intermediate lever has several times been the object of terminological discussions, because it seems to combine elements of *Prell-* and *Stoßmechanik*. Konstantin Restle recently has tried to introduce a new, more detailed description of this action type, suggesting the following terminology: “*Stoßmechanik* with *Prell*-part and brass *Kapsel*, hammer pointing to the back and attached to the key.”⁹⁷ Although Restle is right in pointing out that the hammer itself functions on the principle of a *Stoßmechanik* by being pivoted as a one-armed lever and put in motion by a push from underneath, he has overlooked one very important element concerning the hammer, which is very different from the *Stoßmechanik*: the hammer in Senft’s action is attached to the key, not pivoted separately, as in a proper *Stoßmechanik*. This is a crucial factor in the hammer motion, which in Senft’s action is not only initiated in the manner of a *Prellmechanik* by a two-armed lever hitting against an obstacle, but also shares the main disadvantage of the *Prellmechanik*, namely that the point where the string is struck by the hammer changes slightly according to the force with which the key is depressed.⁹⁸ Therefore, it is not correct to use the term *Stoßmechanik* in connection with this action-type. However, Restle gives an important explanation for the use of the intermediate lever:⁹⁹ it enables the player to repeat a note without totally releasing the key, thus making faster repetition possible.

The square piano by Senft in New York is not a small traveling instrument (fig. 40). Its case dimensions are similar to those of a large unfretted clavichord of the late eighteenth century, and approximately equal to the square piano by Senft in Berlin.¹⁰⁰ The oak walls stand on top of the lower layer of a two-layer bottom board. The compass is FF to f³, and the instrument is double strung except in the lowest half octave from FF

96. Eva Badura-Skoda, “Prolegomena to a History of the Viennese Fortepiano,” *Israel Studies in Musicology* 2 (1980), 89.

97. Restle, “Zwitterformen,” 87: “Stoßmechanik mit Prell-Glied und Messing-kapsel, Hammer nach hinten gerichtet und auf der Taste gelagert.”

98. Pfeiffer, *Vom Hammer*, 20 and 28.

99. Restle, “Zwitterformen,” 86.

100. *Ibid.*, 80.

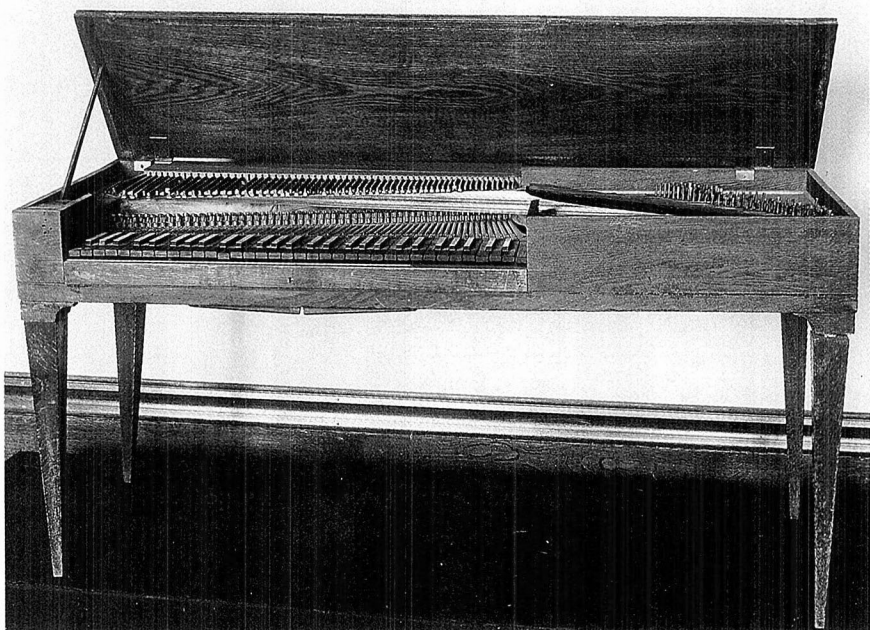


FIGURE 40. Square piano by Ignace Joseph Senft, 1804. The Metropolitan Museum of Art, New York, 89.4.3136. Photo: MMA.

to BB, which is single strung. The same compass and stringing arrangement occurs in the square piano by Senft in Berlin.¹⁰¹ But the two instruments differ both in *Stichmaß* (three-octave span) and c^2 -length. The *Stichmaß* is 462 mm in the instrument in Berlin and 474 mm in the square piano in New York, while the c^2 -length of Senft's square piano in New York is 297 mm, considerably longer than the 277 mm measured by Restle in the square piano in Berlin. Probably these two different c^2 -lengths in otherwise quite similar instruments reflect two different pitches, as the difference in length would result in more than a semi-tone's difference in pitch, assuming all other factors (string diameter, tension, stringing material) are equal.¹⁰²

101. *Ibid.*, 81.

102. Michael Latham found two different c^2 string lengths in two grand pianos by the Augsburg maker Franz Joseph Wirth, which suggests to him that they might have been intended to be tuned to choir pitch and chamber pitch respectively ("The Stringing, Scaling and Pitch of Viennese Pianos around the Turn of the Eighteenth Century," unpublished typescript, 1993, p. 10). I thank Mr. Latham for giving me a copy of this paper.

Senft's keyboard and action are carried by a key frame. The key lever ends are guided between lateral wooden slats, which are part of the key frame. The over rail again serves as *Prelleiste*. The key levers are rounded on top between the balance point and the *Kapsel*, and are carved between the flat and the rounded parts in the manner of a clavichord (fig. 41). The one-armed hammer shanks are pivoted in brass *Kapseln* that look like a typical Viennese product (fig. 42). In contrast, the square piano by Senft in Berlin has *Kapseln* in form of a simple brass rod, divided down the middle and bent like a fork.¹⁰³ Similar *Kapseln* were used by Franz Joseph Wirth in the previously mentioned grand

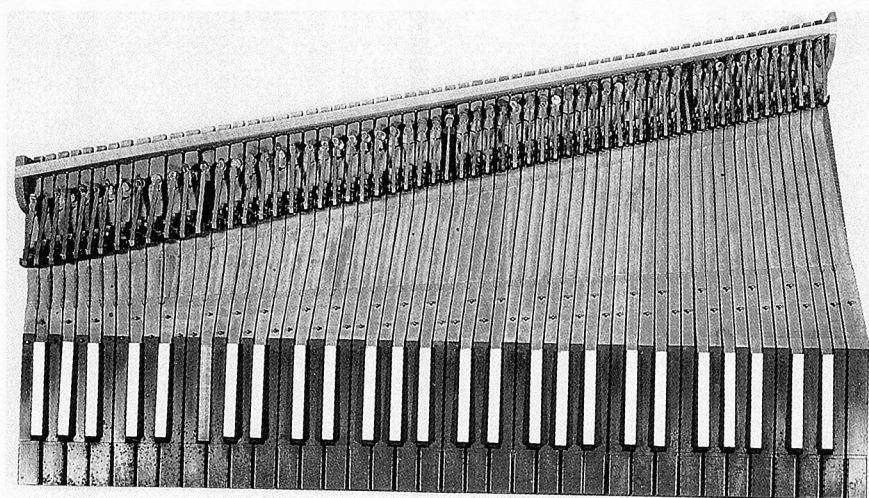


FIGURE 41. Keys and action of the square piano by Ignace Joseph Senft, 1804. The Metropolitan Museum of Art, New York, 89.4.3136. Photo: MMA.

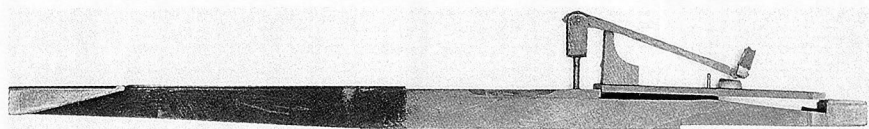


FIGURE 42. Key lever and action of the square piano by Ignace Joseph Senft, 1804. The Metropolitan Museum of Art, New York, 89.4.3136. Photo: MMA.

103. Restle, "Zwitterformen," 86.

piano from 1803, and by Johann Schmid (1757–1804) in Salzburg.¹⁰⁴ These *Kapsel* forms could be made by the piano builder himself, whereas the Viennese *Kapsel* had to be bought. This might have been a criterion for the price of an instrument: for example, Karl Lemme offered both brass and wooden *Kapseln* in otherwise similar grand pianos in 1802, with the latter being less expensive than the former.¹⁰⁵ Obviously it was more economical to produce the wooden *Kapseln* than to import the brass ones. It is uncertain if the custom-made *Kapseln* in the Senft square piano in Berlin imply a cheaper model or if the Viennese-like brass *Kapseln* in the New York instrument are later replacements.

Senft's square piano from 1804 in New York has overdampers in the form of one-armed levers, pivoted in a comb-like rack by one continuous brass rod axle. Interestingly, the damper rail is set into a cut-out of the spine. This construction is otherwise known to the author only in square pianos with simple *Stoßmechanik* of the type built by Johannes Zumpe, and many others. The two knee levers of the 1804 Senft operate the dampers and a harp stop. The lever system inside the instrument resembles the construction found in Stein's grand pianos, but is very unusual for square pianos. This also supports the hypothesis that Senft worked for Stein at one time. The lack of a piano stop leads to the conclusion that the hammer heads might have been originally covered with leather, as they are now.

German Influence on Early American Square Piano Building

In the second half of the eighteenth century the need for reasonably priced domestic instruments in German settlements on America's east coast motivated local carpenters to build square pianos after familiar models. The most important area for such activities seems to have been Pennsylvania, where musical practice was an integral part of everyday religious life in many Moravian communities. Laurence Libin has shed light on the German-American piano builder John Huber, active in southeastern Pennsylvania about 1800,¹⁰⁶ and has drawn attention to an unsigned German-American square piano, now kept at The Metropoli-

104. Birsak, *Klaviere*, 72 and 138.

105. Karl Lemme, *Verzeichnis der verschiedenen Sorten von grossen Pianoforte's, Pianoforte's in Klavierform und Klavieren* (Braunschweig: Karl Reichard, 1802), unpaginated.

106. Laurence Libin, "John Huber's Pianos in Context," this JOURNAL 19 (1993): 5–37; idem, "John Huber Revisited," *ibid.* 20 (1994): 73–83.

tan Museum of Art, inv. no. 1987.229.¹⁰⁷ Another unsigned German-American square piano owned by Old Sturbridge Village in Sturbridge, Massachusetts (inv. no. 10.17.3A), is now on loan at the Musical Instruments Department of the Museum of Fine Arts, Boston.¹⁰⁸

The American provenance of the square piano MMA 1987.229 has been proved by microscopic wood analysis done by John Koster.¹⁰⁹ The square piano from Old Sturbridge Village has American shape notes written on its key fronts, confirming its American origin as well.¹¹⁰ It has a compass of C to f³, which would suggest a late eighteenth-century origin, but the massive case construction could also point to a date early in the nineteenth century. In this case one could assume that the shape notes were written on the key fronts immediately after the instrument was finished.

The square piano MMA 1987.229, the instrument from Old Sturbridge Village, and a Huber piano in Old Salem, North Carolina,¹¹¹ have a simple *Prellmechanik* with the hammer shank pivoted in a rectangular wooden *Kapsel* (figs. 43 and 44). In all three German-American instruments hammer shank and hammer head are connected by a joint consisting of mortise and tenon, as in the instruments by Baumann, Brosy, and Eppel, whereas the *Kapseln* are attached to the key levers by an adjustable threaded metal rod which protrudes considerably at the underside of the key lever. There is a surprising similarity in the shape of the hammer shanks between these three German-American square pianos and those by Baumann, Brosy, and Eppel.¹¹² Also, the ornamental treble end of the hitch-pin plank, found in the square pianos by Baumann, Brosy, Eppel,

107. Laurence Libin, "A Unique German-American Square Piano," *Early Keyboard Journal* 9 (1991): 7–20.

108. I am grateful to Darcy Kuronen for drawing my attention to this instrument. There are also square pianos with *Prellmechanik* by the important Pennsylvania maker Charles Albrecht (1759/60–1848), one of which has no escapement (Smithsonian Institution inv. no. 315,682; see Clinkscale, *Makers of the Piano*, 4). This instrument has not yet been studied by the present author, but might be important in the context discussed here as well.

109. Libin, "A Unique German-American Square Piano," 9.

110. I thank Darcy Kuronen for pointing out the meaning of these signs. Shape-note hymnody, which originated early in the nineteenth century in the South and Midwest of the U.S.A., is a body of rural American sacred music notated so that each of the solmization syllables is represented by a note head of a different shape. Much of the repertoire was written by late eighteenth-century singing-school composers. See *The New Grove Dictionary of American Music*, ed. H. Wiley Hitchcock and Stanley Sadie (London: Macmillan Press, 1986), 4:201.

111. Libin, "John Huber's Pianos," 22.

112. See Brauchli, "Christian Baumann's Square Pianos," 35; and Cordonnier, *La Collection Hel*, 51.

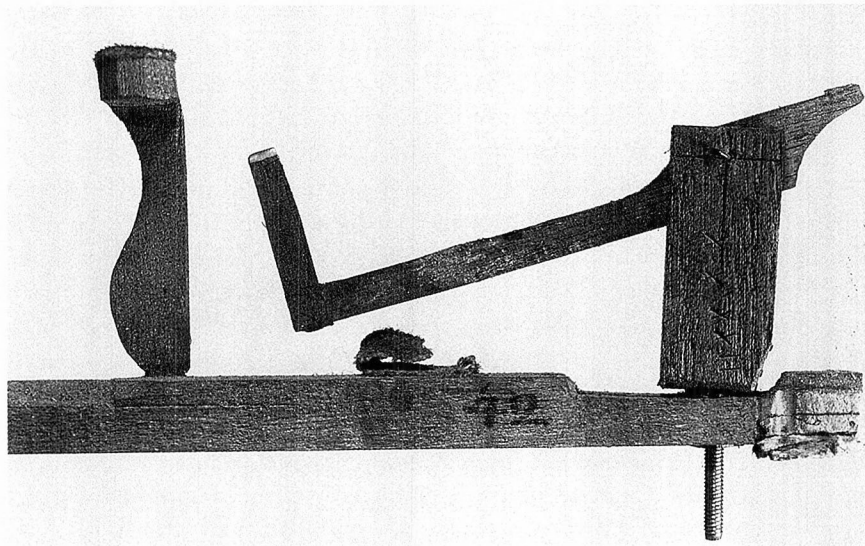


FIGURE 43. Action of an unsigned German-American square piano. The Metropolitan Museum of Art, New York, 1987.229. Photo: MMA.

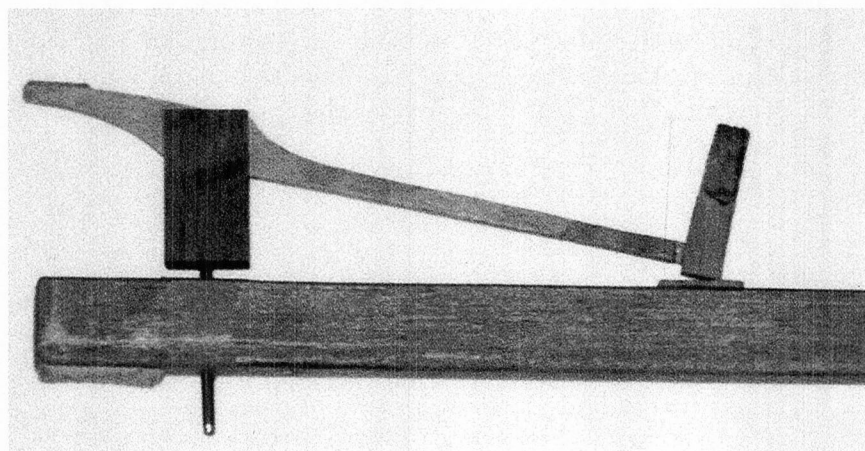


FIGURE 44. Action of an unsigned German-American square piano. Old Sturbridge Village, Mass., 10.17.3A. Photo: Sabine Klaus.

and Quante, is shared by the German-American square pianos MMA 1987.229 (fig. 45), Old Sturbridge Village (fig. 46), and all three pianos by John Huber. Huber's square piano at Old Salem has the type of one-armed underdampers¹¹³ mentioned above as typical for the square pianos in the vicinity of the Rhine River.

There is some evidence connecting the square piano MMA 1987.229 to the area near Strassburg. Formerly this instrument contained two "sticks," one reportedly inscribed *Gettel* and *H. 1807*, the other bearing the name *Dhelingen*, a place not far from Strassburg.¹¹⁴ These sticks are



FIGURE 45. Unsigned German-American square piano. The Metropolitan Museum of Art, New York, 1987.229. Photo MMA.

113. Libin, "John Huber's Pianos," 20.

114. Libin, "A Unique German-American Square Piano," 7.

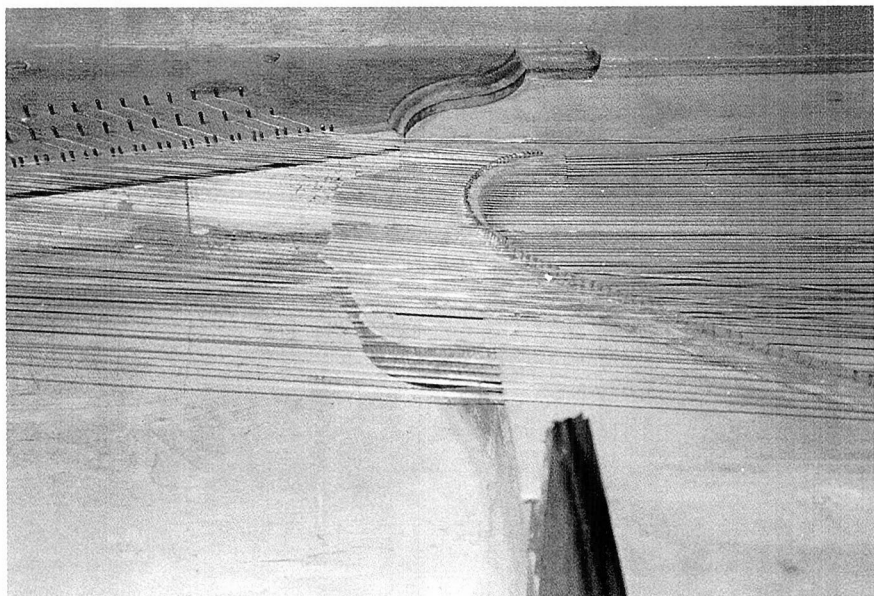


FIGURE 46. Hitch-pin plank treble end and soundboard protrusion of an unsigned German-American square piano. Old Sturbridge Village, Mass., 10.17.3A. Photo: Sabine Klaus.

no longer present, and Libin doubted that they originally were a part of it. However, as Dhelingen was the birthplace of a daughter of one of the original owners of the instrument (Henry Gettel), Libin proposed that this square piano could have originated in the area close to Strassburg. But, as Libin states, this is contradicted by the fact that the square piano does not resemble any local measurements, and is made out of wood of American origin.¹¹⁵ However, it is possible that this square piano was built by someone from the area near Strassburg who had come to America. This seems to be supported by the features of this instrument which correlate with the square pianos from the vicinity of the Rhine River, listed above. Together with the instruments by Huber and the square piano from Old Sturbridge Village, MMA 1987.229 seems to show that there was a certain influence of the square piano building tradition from the Rhine area on North American square piano production in the late eighteenth and early nineteenth centuries.

Yet there are also some features which might be regarded as typically North American. There is a certain tendency to less careful finishing of

115. *Ibid.*, 8–9.

action parts, seen for example in the lack of smoothed or chamfered edges in the German-American square pianos under discussion (see fig. 43). The instruments by Huber and the square piano from Old Sturbridge Village show a case construction differing from German instruments by having the walls attached to the sides of the bottom board, instead of sitting on top of it, as in the square piano MMA 1987.229. The decorative form of the soundboard protrusion seen in the two square pianos MMA 1987.229 and Old Sturbridge Village (figs. 46 and 47) is another unusual characteristic.

In summary, one can say that although German-American square piano building was clearly influenced by certain German regions, for example the Rhine River area, nevertheless distinctive American features can be seen that might in the future help to distinguish German-American square pianos from German ones.

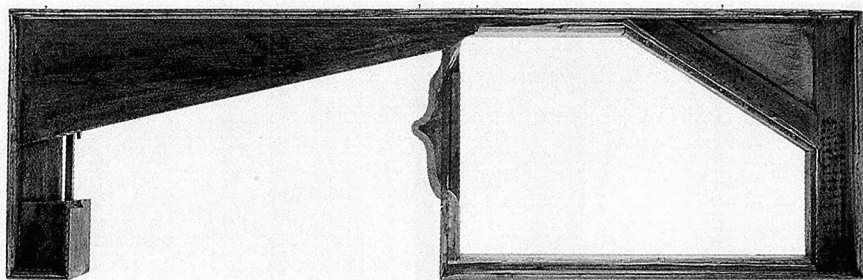


FIGURE 47. Plan view of case with soundboard, keyboard and bottom removed. Unsigned German-American square piano. The Metropolitan Museum of Art, New York, 1987.229. Photo: Stewart Pollens.

Conclusion

Signed and dated square pianos with *Prellmechanik* from the eighteenth and early nineteenth centuries allow us to determine the regional distribution of a number of different design features. As we have seen, certain types of construction were concentrated in the vicinity of the Rhine River or in the cities of Nuremberg and Augsburg. The presence in unsigned square pianos of features associated with these places might in the future help to determine their geographic origin; however, attribution of unsigned instruments to specific makers remains difficult, because similar features appear in square pianos by different builders working within a given center or region. Rather, it is to be

expected that the same models were built and copied by many makers, both professionals and amateurs. As can be seen especially clearly in the German-American instruments, one might even find features originating in a particular area in Germany, which subsequently spread to a country far from their origin through the migration of individual makers. Moreover, a consideration of instruments with very simple action types shows that simplicity, at least by itself, is not a valid criterion for dating square pianos, as extremely simple actions continued to exist until the very end of the eighteenth or even the beginning of the nineteenth century.

Other, more general features of German square pianos with *Prellmechanik* may help to determine whether such instruments are still in their original condition. For example, the question whether hammer heads were originally bare or leathered can be answered by the presence or absence of a piano stop. Analysis of the quality of craftsmanship in some of the square pianos studied shows that judgments about original and non-original parts must be done very carefully in this type of instrument, taking into account the overall standard of workmanship displayed by a particular instrument's maker.