Appendix A

The First Piano to be Brought to Australia?
George Bouchier Worgan’s square piano
by Frederick Beck (London, 1780/86?):
Description and measurements

Nameboard

• On a single pine\(^1\) plank 830 millimetres long, 83 millimetres wide, 16 millimetres thick.

• Removable: Drops down within slots at either end. This facilitates the removal of the action frame.

• Banded top and bottom (each 18 millimetres wide) with plain mahogany veneer, with a central band of fiddle-back mahogany veneer stained brown (44 millimetres wide) with stringers top and bottom (ebony, edged each side with boxwood).

• Varnished—‘using the standard spirit varnish of the [contemporaneous] furniture trade’.\(^2\)

• Handwritten pen work in ink, on an elongated applied boxwood ogee-pointed cartouche (360 millimetres long, 30 millimetres wide).

• The inscription (Plates 134–42), the top line of which is written in Latin, reads:\(^3\) *Fredericus Beck Londini Fecit 1780 / No. 4 and 10 Broad Street Soho.*

• Infills of fine pen work scrolls and dots.

Although it is likely that the date of the instrument is 1780, there is room for reasonable doubt. The calligraphic style of Beck’s nameboard inscriptions did not remain consistent throughout his output. Note the difference, for example, between the ‘7’ on an instrument of 1786 (Plates 20a and 20b) and the ‘7’s on instruments dated 1774 (Plate 20c), 1776 (Plate 43t), 1777 (Plate 20d), 1778 (Plates 20e and 20f), 1780 (Plate 20), 1782\(^4\) and 1783 (Plate 20g). Note also the

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1 The nameboard is probably made from Scotch pine (*Pinus sylvestris*)—‘the most important European hard pine (its natural range includes much of the continent but only the northern part of the British Isles, hence its English name)’. Koster, Keyboard Musical Instruments in the Museum of Fine Arts, Boston, p. 331.

2 Cole, Broadwood Square Pianos, p. 102.

3 See ‘Date’, in Chapter 2, Volume 1 of this publication.

4 See photograph in Beurmann, Das Buch vom Klavier, Plate 110b ‘Das Tafelklavier von Beck’, p. 54.
difference between the ‘8’ on an instrument of 1786 (Plates 20a and 20b) and the ‘8’s on instruments dated 1778 (Plates 20e and 20f), 1780 (Plates 16 and 20) and 1783 (Plate 20g).

Consistencies in calligraphic style, however, can also be found. Note the similarity between the ‘7’s on Beck instruments dated 1774 (Plate 20c), 1776 (Plate 43t), 1777 (Plate 20d), 1780 (Plate 20), 1782 and 1783 (Plate 20g). Note also the similarity between the ‘8’s on Beck instruments dated 1778 (Plates 20e and 20f), 1782 and 1783 (Plate 20g).

Regardless of any variations in calligraphic style, Beck’s nameboard inscriptions reflect the characteristically serpentine freedom and balance of numerals written by accomplished eighteenth-century hands.7

Initial inspection of George Worgan’s piano suggests the date of the instrument to be 1780 (Plate 20). It is tempting, however, to construe the small oblique line above the ‘0’ as a now-faded oblique line that was once the top of a ‘6’ (Plates 20 and 139). Given the degree of fading and the calligraphic style (which is full-bodied, rather than fine-lined), this may be the case.

Comparison of the ‘0’ (if viewed as a ‘6’) written on the nameboard of Worgan’s piano (Plate 20) with the ‘6’ written on the nameboards of two Beck pianos dated 1776 (Plate 43t) and 1786 (Plates 20a and 20b)8 reveals marked differences in proportion and form—especially in relation not only to the thickness and angle of the two thick pen strokes of the circular body of the ‘0’, but also to the thickness and angle of the curving top stroke of the ‘6’. Using the calligraphic style of the 1776 (Plate 43t) and 1786 (Plates 20a and 20b) instruments as a basis for supposition, had the ‘0’ on Worgan’s piano been a ‘6’, the body of the ‘6’ would have been more elliptical, and the angle of the two thick pen strokes of the circular body would have inclined markedly towards the right.

Although it seems likely that the date of Worgan’s piano is 1780, reasonable doubt remains; it could be 1786.

Of the 27 Beck square pianos listed by Martha Clinkscale,9 descriptions of the nameboard are provided for 19 instruments. The nameboard inscriptions of these pianos take a range of forms:

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5 See photograph in ibid., p. 54. See also photographs in ‘Beck, Frederick’ at hammerfluegel.net/.
6 Ibid.
7 See Cole, Broadwood Square Pianos, p. 168.
9 Watson, Clinkscale Online. See also ‘Extant Pianos by Frederick Beck’ in Chapter 2, Volume 1 of this publication.
1.  *Fredericus Beck Londini Fecit 1772 / Broad Street, Golden Square*
2.  *Fredericus Beck Londini Fecit 1774 / No 4 Broad Street, Golden Square*
3.  *Fredericus Beck Londini Fecit 1775 / No 4 Broad Street, Golden Square*
4.  *Fredericus Beck Londini Fecit 1785 / No 10 Broad Street, Soho.*

An instrument of 1778 (Plates 20e and 43f), not listed by Clinkscale, has the following nameboard inscription: *Fredericus Beck Londini Fecit 1778 / No 4 and 10 Broad Street, Golden Square.*

An instrument of ca 1790 (serial number 2580), not listed in Clinkscale, has the following nameboard inscription:¹⁰ *No 2580, Fredericus Beck Londini Fecit, No 10 Broad Street Soho.*

In relation to Beck’s instruments, the range of nameboard inscription content and form listed above is representative.¹¹

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¹⁰ I am indebted to Andrew Snedden for this information (email to the author, 12 December 2013).
¹¹ For a list of the 25 Beck square piano nameboard inscriptions known to the author, see ‘1782/87?, Serial Number 5008’, in Appendix L, this volume.
Plate 136 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): nameboard (detail)—‘Beck’.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 137 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): nameboard (detail)—‘Londini’.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 138 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): nameboard (detail)—‘Fecit’.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 139 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): nameboard (detail)—‘1780’.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 140 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): nameboard (detail)—‘No. 4 and 10’.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 141 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): nameboard (detail)—‘Broad Street’.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Serial Number

‘Up until 1780 at least, Beck’s square pianos were not numbered.’[^12]

- No serial number can be found.
- The number 111 is prominently handwritten, in chalk, on the bass end of the underside of the keyframe back touch rail. It is tempting (at first glance) to assume that this may be a serial number. It is not known who wrote it, or when.

There are two other numbers, faintly handwritten in chalk, on the bass end of the underside of the keyframe back touch rail.

Each of the three numbers is located in proximity to the three separate longitudinal bars (running from front to back) connecting the balance rail with the back touch rail. The treble bar is labelled ‘I’, the tenor bar is labelled ‘II’ and the bass bar is labelled ‘III’ (Plate 143).

It is almost certain that the handwritten chalk numbers are directly associated with the keyframe’s construction.


Source: Stewart Symonds Collection, Sydney. Photo by the author.

Case

An oblong, fairly shallow box, open at the top (but closed by the lid) and divided into two compartments. The soundboard is mounted in the right-hand compartment, closed to the front, while the larger, left-hand compartment, open to the front, contains [an inset] … keyboard and [the] action, a single unit which slides in under the strings like a drawer.13

Length

• Treble-edge front corner to bass-edge front corner (including main lid overhang): 1455 millimetres.
• Right-hand-side front (from the treble-end cheek to the right-hand outside edge): 505 millimetres long, 192 millimetres high, 21 millimetres thick.
• Left-hand-side front (from the bass-end cheek to the left-hand outside edge): 97 millimetres long, 192 millimetres high, 21 millimetres thick.

Width

- Outside measurement from the front to the back: 505 millimetres.

Height

- From the bottom of the instrument: 191 millimetres.

The dimensions of the case fit comfortably within the range of the average dimensions of Frederick Beck’s instruments.

**Average Dimensions of Frederick Beck’s Square Pianos**

Based on data for the dimensions of 20 Frederick Beck square pianos, the average length of Beck’s pianos is 1475.75 millimetres—the shortest of these 20 instruments is 1427 millimetres (Plate 43f); the longest 1630 millimetres.

Based on the measurements of 16 of the above 20 instruments (instruments dated 1775, 1778? [estimate], ca 1790? and ca 1795 are excluded, owing to a lack of data), the average width is 507 millimetres—the narrowest of these is 490 millimetres (Plates 43a, 43b and 43s); the widest is 545 millimetres (Plate 43h).

The average length of eight Beck instruments made in the 1770s is 1449 millimetres—the shortest of these eight instruments is 1427 millimetres (Plate 43f), the longest 1470 millimetres.
The average width of six of the same eight instruments made in the 1770s (instrument dated 1775 and 1778? [estimate] are excluded, owing to a lack of data) is 495.3 millimetres—the narrowest of these is 490 millimetres (Plates 43a, 43b and 43s);\(^\text{23}\) the widest 510 millimetres.\(^\text{24}\)

The average length of nine Beck instruments made in the 1780s\(^\text{25}\) is 1479.77 millimetres.

The average length of nine Beck instruments made in the 1780s\(^\text{26}\) plus three instruments made ca 1790?\(^\text{27}\) ca 1790\(^\text{28}\) and about the mid-1790s\(^\text{29}\) is 1493.58 millimetres—the shortest of these 12 instruments is 1447 millimetres;\(^\text{30}\) the longest 1630 millimetres.\(^\text{31}\)

The average length of three instruments made in the ca 1790s\(^\text{32}\) is 1535 millimetres.

The average width of the nine instruments made in the 1780s plus one instrument made ca 1790\(^\text{13}\) (the instruments dated ca 1790?\(^\text{33}\) and ca mid-1790s are excluded, owing to a lack of data) is 514 millimetres—the narrowest of these is 501 millimetres (Plate 43k);\(^\text{35}\) the widest 545 millimetres (Plate 43h).\(^\text{36}\)

Because the length of the ca 1795 piano\(^\text{37}\) can be explained by the instrument’s extended keyboard compass (FF–c\(^\text{4}\)), and no other Beck instruments (for which

\(^\text{23}\) Instruments dated 1773 (owner: Pelham Galleries, London); 1774 (owner: Bachhaus, Eisenach, Germany); and 1776 (owner: Michael Borgstede, Germany).


\(^\text{25}\) Instruments dated 1780/86?, George Worgan's piano (owner: Stewart Symonds, Sydney); 1782 (owner: Museum für Kunst und Gewerbe, Hamburg) (see Andreas Beurmann, *Das Buch vom Klavier*, p. 57); 1782 (owner[s]: unknown); 1782/87? (owner: Norfolk Charitable Trust, Sharon, MA, USA; serial number 5008); 1782/90? (owner: Osaka College of Music Museum, Japan), ‘tangent action’ instrument; 1784; 1785; 1786; and 1788 (serial number 1941) (see Watson, *Clinkscale Online*).

\(^\text{26}\) Instruments dated 1780/86?, George Worgan's piano (owner: Stewart Symonds, Sydney); 1782 (owner: Museum für Kunst und Gewerbe, Hamburg) (see Beurmann, *Das Buch vom Klavier*, p. 57); 1782 (owner[s]: unknown); 1782/87? (owner: Norfolk Charitable Trust, Sharon, MA, USA; serial number 5008); 1782/90? (owner: Osaka College of Music Museum, Japan), ‘tangent action’ instrument; 1784; 1785; 1786; and 1788 (serial number 1941) (see Watson, *Clinkscale Online*).

\(^\text{27}\) An instrument dated ca 1790? (owner[s]: unknown, in Germany; serial number 2505).

\(^\text{28}\) An instrument dated ca 1790 (owner[s]: unknown; serial number 2580).

\(^\text{29}\) An instrument dated ca 1795 (estimate). See Watson, *Clinkscale Online*.


\(^\text{31}\) An instrument dated ca 1795 (estimate). See Watson, *Clinkscale Online*.

\(^\text{32}\) Instruments dated ca 1790? (owner[s]: unknown, in Germany; serial number 2505); ca 1790 (owner[s]: unknown; serial number 2580); and ca 1795 (estimate) (see Watson, *Clinkscale Online*).

\(^\text{33}\) Serial number 2580 (owner[s]: unknown).

\(^\text{34}\) Serial number 2505 (owner[s]: unknown, in Germany).


\(^\text{36}\) An instrument dated 1782/87? (owner: Norfolk Charitable Trust, Sharon, MA, USA; serial number 5008).

\(^\text{37}\) See Watson, *Clinkscale Online*. 
data were available at the time of publication)\textsuperscript{38} have a compass of FF–c\textsuperscript{4}, the average length of Beck’s pianos (excluding the ca 1795 piano) is 1467.63 millimetres. Excluding the ca 1795 piano, the shortest instrument is 1427 millimetres (Plate 43f);\textsuperscript{39} the longest 1595 millimetres (Plate 43h).\textsuperscript{40}

Measurements of the 20 Frederick Beck square pianos for which data were available at the time of publication are given below.

<table>
<thead>
<tr>
<th>Date</th>
<th>Length (in mm)</th>
<th>Width (in mm)</th>
<th>Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>1772</td>
<td>1440</td>
<td>500</td>
<td>Mr Tidstrom, Netherlands; formerly housed at the Rien Hasselaar Collection, Amsterdam.</td>
</tr>
<tr>
<td>1773</td>
<td>1435</td>
<td>490</td>
<td>Pelham Galleries, London, UK.</td>
</tr>
<tr>
<td>1774</td>
<td>1440</td>
<td>490</td>
<td>Bachhaus, Eisenach, Germany.</td>
</tr>
<tr>
<td>1775</td>
<td>1470</td>
<td>?</td>
<td>Musée de la Musique, Cité de la Musique; formerly Musée Institut du Conservatoire National Supérieur de Musique, Paris, France.</td>
</tr>
<tr>
<td>1776</td>
<td>1430</td>
<td>490</td>
<td>Michael Borgstede, Germany.</td>
</tr>
<tr>
<td>1778</td>
<td>1440</td>
<td>510</td>
<td>Musée instrumental de Bruxelles, Brussels, Belgium.</td>
</tr>
<tr>
<td>1778</td>
<td>1427</td>
<td>492</td>
<td>Thomas Strange.</td>
</tr>
<tr>
<td>1778?</td>
<td>1510</td>
<td>?</td>
<td>Unknown; serial number 3091.</td>
</tr>
<tr>
<td>1780/86?</td>
<td>1455</td>
<td>505</td>
<td>Stewart Symonds, Sydney, Australia; George Worgan’s piano.</td>
</tr>
<tr>
<td>1782</td>
<td>1447</td>
<td>504</td>
<td>Museum für Kunst und Gewerbe, Hamburg, Germany.</td>
</tr>
</tbody>
</table>

\textsuperscript{38} Instruments dated 1772; 1773; 1774; 1775 (‘Cité de la musique, Paris’, in MIMO Musical Instrument Museums Online); 1776 (owner: Michael Borgstede, Germany); 1778 (owner: Musée instrumental de Bruxelles, Brussels); 1778 (owner: Thomas Strange); 1778? (estimate) (owner[s]: unknown; serial number 3091) (see ‘Sale 6414 Lot 277’, in Christie’s The Art People); 1780/86?, George Worgan’s piano (owner: Stewart Symonds, Sydney); 1782 (owner: Museum für Kunst und Gewerbe, Hamburg) (see Beurmann, Das Buch vom Klavier, p. 57); 1782 (owner[s]: unknown); 1782/87? (owner: Norfolk Charitable Trust, Sharon, MA, USA; serial number 5008); 1782/90? (owner: Osaka College of Music Museum, Japan), ‘tangent action’ instrument; 1784; 1785; 1786; 1788 (serial number 1941); ca 1790? (owner[s]: unknown, in Germany; serial number 2505) (see ‘Lot Details’ in Bonhams, ‘Lot 31 Beck et Corrie’); and ca 1790 (owner[s]: unknown; serial number 2580).

\textsuperscript{39} An instrument dated 1778 (owner: Thomas Strange). See Watson, Clinkscale Online.

\textsuperscript{40} An instrument dated 1782/87? (owner: Norfolk Charitable Trust, Sharon, MA, USA; serial number 5008).
### Appendix A

<table>
<thead>
<tr>
<th>Date</th>
<th>Length (in mm)</th>
<th>Width (in mm)</th>
<th>Owner</th>
</tr>
</thead>
<tbody>
<tr>
<td>1782</td>
<td>1460</td>
<td>510</td>
<td>Unknown.</td>
</tr>
<tr>
<td>1782/87?</td>
<td>1595</td>
<td>545</td>
<td>Norfolk Charitable Trust, Sharon, MA, USA; serial number 5008.</td>
</tr>
<tr>
<td>1782/90?</td>
<td>1468</td>
<td>515</td>
<td>Osaka College of Music Museum, Japan; ‘tangent action’ instrument.</td>
</tr>
<tr>
<td>1784</td>
<td>1480</td>
<td>510</td>
<td>Eberhard Brünger, Bielefeld, Germany.</td>
</tr>
<tr>
<td>1785</td>
<td>1469</td>
<td>504</td>
<td>Colonial Williamsburg Foundation, Williamsburg, VA, USA.</td>
</tr>
<tr>
<td>1788</td>
<td>1480</td>
<td>520</td>
<td>Unknown; serial number 1941.</td>
</tr>
<tr>
<td>ca 1790?</td>
<td>1490</td>
<td></td>
<td>Unknown, in Germany; serial number 2505.</td>
</tr>
<tr>
<td>ca 1790</td>
<td>1485</td>
<td>526</td>
<td>Unknown; serial number 2580. (I am grateful to Andrew Snedden, York, UK, for data associated with this instrument.)</td>
</tr>
<tr>
<td>ca 1795</td>
<td>1630</td>
<td></td>
<td>Unknown; this instrument’s extended keyboard compass (FF–c⁴) may explain its length. (See Watson, Clinkscale Online.)</td>
</tr>
</tbody>
</table>

The length of George Worgan’s 1780/86? Beck piano (1455 millimetres) is slightly on the long side for Beck’s 1770s instruments (the average length of which is 1440.3 millimetres), and slightly on the short side for the nine instruments made during the 1780s (the average length of which is 1479.77 millimetres).

Even if the ca 1795 instrument is excluded from analysis because of its length (the result of an extended keyboard compass: FF–c⁴), the length of George Worgan’s 1780/86? Beck piano (1455 millimetres) is slightly on the short side compared with the remaining 19 Frederick Beck square pianos (for which data were available at the time of publication), none of which has a compass of FF–c⁴, and whose average length is 1467.63 millimetres.

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41 Instruments dated 1772; 1773; 1774; 1775 (see ‘Cité de la musique, Paris’, in MIMO Musical Instrument Museums Online); 1776 (owner: Michael Borgstede, Germany); 1778 (owner: Musée instrumental de Bruxelles, Brussels); 1778 (owner: Thomas Strange); 17787 (estimate) (owner[s]: unknown; serial number 3091); 1780/86?, George Worgan’s piano (owner: Stewart Symonds, Sydney); 1782 (owner: Museum für Kunst und Gewerbe, Hamburg) (see Beurmann, Das Buch vom Klavier, p. 57); 1782 (owner[s]: unknown); 1782/87? (owner:
Moulding

- Step-half-round-and-step: 4 millimetres wide (Plate 144).
The moulding runs around the upper top inside edge of the case.


Source: Stewart Symonds Collection, Sydney. Photo by the author.

Similar types of moulding can be found on several mid to late eighteenth-century clavichords and square pianos either made in Germany, or made by German makers. For example:

1. fretted clavichord by anonymous (ca 1750)\(^{42}\)
2. unfretted clavichord by Johann Anton Fuchs (1737–96) (Innsbruck, 1781)\(^{43}\)
3. tafelklavier by Johann Christoph Steinbrück (fl. ca 1780s) (Gotha, 1782)\(^{44}\)
4. tafelklavier by Wilhelm Zimmermann l’aîné (fl. 1780–1805) (Paris, 1787)\(^{45}\)
5. *tafelklavier* by Christian Gottlob Hubert (1714–93) (Ansbach, 1787).46

**Inside of the Case**

**Width**

- Flat-surfaced wooden block at the bass-end inside of the case: 60 millimetres (Plate 145).
- The wooden block ends slightly short of the hitch-pin block (Plate 146).

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Plate 145 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): flat-surfaced wooden block at the bass end inside the case.

*Source: Stewart Symonds Collection, Sydney. Photo by the author.*

46 *Tafelklavier* by Christian Gottlob Hubert (Ansbach, 1787), in *Sammlung historischer Musikinstrumente Dr. Ulrich Rück* (Collection of Historic Musical Instruments: Dr Ulrich Rück), housed at the Germanisches Nationalmuseum, Nuremberg, Inv. no. 1145. In ibid., p. 162, ‘Upper case-moulding (1)’.
Plate 146 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the wooden block at the bass end inside the case ends slightly short of the hitch-pin block.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Height

- Treble end from the top of the case to the soundboard: 45 millimetres.
- Treble end from the top of the case to the top of the moulding on the soundboard: 36 millimetres.
- Right-hand side from the top of the case to the bottom of the moulding on the soundboard: 43 millimetres. (The moulding on the soundboard travels from the treble side of the keywell across the inside edge of the right-hand front of the instrument, and returns along the entire treble end; Plate 147.)
- Left-hand side from the top of the case to the flat surface on the inside of the case: 41 millimetres.
- Top of the spine to the top of the hitch-pin block at the bass end: 37 millimetres (Plates 148 and 149).
- Treble and bass-end cheeks from the lockboard bottom closure point to the top edge of the cheeks: 110 millimetres. (The lockboard closes the front of the keyboard. It is hinged to the main lid’s front keyboard flap, and can stand vertically when the main lid’s front keyboard flap is folded back; Plates 150 and 151).
Plate 147 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the moulding on the soundboard extends from the treble side of the keywell, across the front inside edge, and along the entire treble end.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 148 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the spine and hitch-pin block at the bass end.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 149 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the spine and hitch-pin block at the bass end (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 150 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the hinged lockboard lying against the main lid’s front keyboard flap, which is folded back.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 151 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the hinged lockboard standing vertically when the main lid’s front keyboard flap is folded back.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Cheeks
- Length of the cheeks from the outside surface of the nameboard to the outside front of the case: 146 millimetres; 18 millimetres thick.
- The running step-half-round-and-step mould around the inside of the case continues along the upper top inside edge of the cheeks (Plate 152).

Case Corners
- Front: Joined with hidden mitre dovetails.
- Back: Lap dovetails visible from behind (Plate 153).

Interior Framing
- Hole in the belly rail (Plate 154).
Plate 152 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass-end cheek—the running step-half-round-and-step mould around the inside of the case continues along the upper top inside edge of the cheeks.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 153 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the bass-end case corner, at the back—lap dovetails are visible.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 154 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): hole in the belly rail.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Soundboard

• Alpine spruce.47

• Grain runs parallel to the spine (Plate 155). The grain is close and fairly uniform—two essential elements for a soundboard of high quality.

• Tightly glued onto pine liners (which are themselves glued to the internal faces of the box formed by the case at the right-hand end of the instrument), as well as onto the top of the wrest-plank.

Ribs

• Soundboard ribs are visible through the hole in the belly rail (Plate 156).

• The main rib is large compared with those around it (Plate 157).

• Several ribs appear to cross under the bridge at more or less right angles (this is similar to Zumpe’s early instruments).

• The main rib appears to be supported underneath by a thick wooden bar (Plate 158).

• One small rib runs near the treble end of the bridge. This small rib appears to have been inserted underneath a crack that runs in the direction of the grain of the soundboard. Because the soundboard is sunken in various places, the bass end of the adjacent larger rib has come away from the underneath of the soundboard (Plate 159).

Plate 155 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): soundboard—the grain runs parallel to the spine.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 156 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): soundboard ribs are visible through the hole in the belly rail.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 157 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the large main soundboard rib, as seen through the hole in the belly rail.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 158 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the main soundboard rib appears to be supported underneath by a thick wooden bar.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 159 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): a small rib runs near the treble end of the bridge—this small rib has been inserted underneath a crack that runs in the direction of the grain of the soundboard. Because the soundboard is sunken in various places, the bass end of the adjacent larger rib has come away from the underneath of the soundboard.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
When compared with the soundboard ribs visible through the hole in the belly rail of some other Beck square pianos, the soundboard ribs on Worgan’s 1780/86? piano appear to be
   a) positioned differently in relation to the bridge
   b) shaped differently
   c) more delicate
   d) generally arranged in a more complex pattern.

Condition

It appears that anachronistic reinforcing material (soundboard barring) has been added to the underside of the soundboard. It is currently not possible to know which soundboard ribs are original. The soundboard is quite sunken in various places (Plate 160), and it may be that some ribs were installed after the piano was made in response to the soundboard’s downward movement and cracking. Despite the addition of ‘extra’ ribs, soundboard sinking has continued; this is evidenced by the bass end of a rib coming away from the underside of the soundboard (Plate 159).

Several cracks in the soundboard have been crudely repaired (Plates 161–3).

Plate 160 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the soundboard is quite sunken in various places.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 161 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): crudely repaired soundboard cracks.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 162 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): crudely repaired soundboard crack (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 163 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): crudely repaired soundboard crack (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Bridge

- Single.
- Beech. This wood is especially suited for the thin bridge: it is hard and has great strength. During the eighteenth century, English makers used mainly beech for the bridges of their harpsichords and pianos.48
- J-form, which has a curve at the treble end, and is straight in the tenor and bass (Plate 164).
- The J-form bridge is typical of the late eighteenth-century English square piano. By comparison, the bridge on contemporaneous clavichords was commonly serpentine (Plate 165).
- Double-pinned throughout the compass.
- Truncated wedge-shaped cross-section (Plate 166), leaning towards the keyboard (the small slant of the bridge lies towards the sounding part of the string) (Plate 167). The right-hand side is raised, with a concave cut-out on the left-hand side, into which the brass guide-pins are driven. This provides a ridge approximately 2 millimetres wide upon which the strings rest.
- Undercut at the bass end (reducing the bridge's footprint) in order to increase the flexibility of the soundboard in this narrow region near the corner, thus making the soundboard generally more resonant (and more resonant to lower frequencies) (Plates 168–71).

48 See Skoweroneck, Harpsichord Construction, p. 188.
Plate 164 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): J-form bridge, with the curve at the treble end.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 165 Clavichord in the Saxon style (ca 1770). Copy by Joris Potvlieghe (2007): serpentine bridge, with a curve at both the treble and the bass ends.

Source: ANU School of Music Keyboard Institute Collection, Canberra. Photo by the author.
Plate 166 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bridge—truncated wedge-shaped cross-section.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 167 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bridge—leaning towards the keyboard.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 168 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bridge—undercut at the bass end.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 169 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bridge—undercut at the bass end (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 170 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bridge—undercut at the bass end (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 171 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bridge—undercut at the bass end (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Appendix A

Height

- Slightly tapering, reducing in height at the extreme treble end.
- f^3 (top note): 10 millimetres.
- g^#2: 11 millimetres.
- GG^#2: 11 millimetres.
- FF (bottom note): 11 millimetres.

Condition

- In the past, a crack at the curve of the bridge has been repaired (Plates 172 and 173).

Plate 172 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): repaired crack in the curve of the bridge.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 173 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): repaired crack in the curve of the bridge (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Nut

• A thin strip of oak?.
• Located parallel to the front edge of the hitch-pin block, immediately behind the nut-pins (Plate 174).

50 In relation to the second extant Beck square piano dated 1780 (owner: Musikinstrumenten-Museum, Berlin), see photograph ‘Beck 011.jpg’ in ‘Beck, Frederick’ at hammerfluegel.net.
Plate 174 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the nut, at the bass end.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Hitch-Pin Block

- Oak.
- Anchored to the spine (Plates 175–7).
Plate 175 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the hitch-pin block anchored to the spine (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 176 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end—the hitch-pin block anchored to the spine (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 177 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble end—the hitch-pin block anchored to the spine (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Wrest-Plank

- In all probability, Beck has followed Zumpe’s design by installing a diagonally disposed wrest-plank at the treble end, made from a composite block of beech and pine.
- The top of the wrest-plank is level with pine liners that are glued to the internal faces of the box formed by the case at the right-hand end of the instrument.

Bottom Boards

- Plain pine.
- Double thickness.
- The lower layer comprises four rectangular planks, the long sides of which are laid adjacent to one another, parallel to the spine (Plates 178 and 179).
• The upper-layer planks are laid diagonally in the direction of the back left-hand corner to the front right corner—that is, parallel with the diagonally positioned strings of the instrument (Plate 180).

• In the bass half of the instrument, the upper-layer planks are reinforced within the case walls by three longitudinal wooden bars running at a right angle to the lower-layer planks (Plate 179). (These three longitudinal wooden bars add only a little strength to the diagonal upper-layer planks.) The middle longitudinal bar is the widest of the three. The bass-end longitudinal bar is approximately two-thirds of the width of the middle longitudinal bar. The treble-side longitudinal bar is approximately five-sixths of the width of the middle longitudinal bar. All three longitudinal bars are glued to the lower-layer bottom boards. The bass-end longitudinal bar is also nailed (two nail heads are visible) to the lower-layer bottom boards.

• A replacement upper-layer section (at the treble end, towards the back) appears to have been added at a later date. The replacement section has four reinforcing screws, each of which passes vertically through the replacement section into the planks of the lower layer (Plate 181).

• The top of the replacement upper-layer section does not sit flush with the top of the original surrounding upper-layer planks; it sits slightly lower (Plate 182). That this is so may have been the intention of the craftsman who installed the replacement section; the removal of the keyframe is not impeded by a protruding top surface.

• The replacement upper-layer section extends to the belly rail.
Plate 178 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bottom boards—four lower-layer planks are laid parallel to the spine.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 179 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): lower-layer bottom boards (detail)—the direction of the grain can be seen through the spaces between the upper-layer planks.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 180 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): double-thickness bottom boards—the upper-layer planks are laid parallel with the strings of the instrument.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 181 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble-end back corner—the replacement upper-layer section, with four reinforcing screws.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 182 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the top of the replacement section does not sit flush with the top of the surrounding upper-layer planks—this ensures that the removal of the keyframe is not impeded by a protruding top surface.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

**Internal Scribe Lines**

- Scribe lines are scored into the inside back of the spine between the bottom boards and the underneath of the hitch-pin block (Plate 183). These score lines may be associated with the maker’s need to obtain an exact correspondence between the dampers (held in a hinged wooden rack located at the top of, and running parallel with, the spine) and the width of the back of each key lever.

Plate 183 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): scribe lines at the treble end on the inside of the spine, between the bottom boards and the underneath of the hitch-pin block (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Main Lid

Length
• Including edge moulding: 1456 millimetres at the front.

Width
• Including edge moulding: 515 millimetres.

Thickness
• Approximately 6 millimetres.
• Solid figured mahogany.
• Grain runs parallel to the spine.
• In the middle of the lid, there is a slightly curved, 15 millimetre-long split running in the direction of the grain.

Moulding
• Applied 7-millimetre convex running mould, with a 12-millimetre overhang along the front and sides of the main lid, excluding the spine (Plate 184).
• The spine side of the main lid is flush with the top of the spine (Plate 185).

Lid-Stick
• Missing. This would have been a tapered wooden prop, hinged with a screw (still extant) at the bottom (wide) end of the taper. The lid-stick probably rotated towards the front of the instrument to attain its rest position.

Lid-Stick Fastening Hole
• A single hole, 7 millimetres square, is located at the bass end of the underside of the lid. This hole is approximately 2.5 millimetres deep at the front edge—that is, at the top edge of the square hole when the main lid is open (Plate 186).

Lid-Stick Screw
• Location: Inside the bass-end case, 193 millimetres from the inside of the spine, 27 millimetres above the flat-surfaced wooden block on the left-hand inside of the case (Plate 187). Witness marks reveal the arc of rotation of the lid-stick.
Plate 184 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass-end front corner—the moulding that runs along the front and sides of the main lid (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 185 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the spine side of the main lid sits flush with the top of the spine.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 186 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): square lid-stick fastening hole.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 187 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): lid-stick screw—witness marks reveal the arc of rotation of the lid-stick.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Lid Sections

- The lid is split into three parts by a longitudinal cut over the nameboard—extending the length of the instrument—and a short lateral cut over the right-hand cheek (Plates 188 and 189).

Main Lid

- Length from the treble-end edge to the bass-end edge: 954.5 millimetres.
- Width from the keyboard front edge to the hinged back edge: 156.5 millimetres.
- Thickness: Approximately 6 millimetres.
- Solid mahogany.
- Rectangular.
- Grain runs in the direction of the spine.
- Hinged to the outside of the spine with two three-screw brass butt hinges—one at the treble and one at the bass end (Plate 190).

Keywell Flap

- The keywell flap is hinged to the main lid with four brass butt hinges (Plate 191). The hinges at the bass and treble ends are three-screw hinges, whilst the two in between are two-screw hinges.

Lockboard

- The lockboard is hinged to the inside of the keywell lid flap with two two-screw brass butt hinges (Plates 192 and 193). The lockboard falls forward, as in clavichords of the Hamburg and Saxon schools.\(^{51}\)
- When the instrument is open, the lockboard may stand vertically as a support for a book of music (Plate 194).
- Length (from the treble-end edge to the bass-end edge): 836.5 millimetres.
- Width (from the bottom edge to the top edge, when closed): 112 millimetres.
- Thickness: 17 millimetres.
- Solid mahogany.

Treble-End Front Lid Flap

- Length from the treble-end edge to bass-end edge: 504 millimetres.
- Width from keyboard front edge to the hinged spine-side edge: 156.5 millimetres.

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- Thickness: 10 millimetres.
- Mahogany.
- Grain runs parallel to the spine.
- The back edge is hinged to the main lid with three two-screw brass butt hinges (Plates 195 and 196).

Moulding

- Applied 7-millimetre convex running mould, with a 12-millimetre overhang along the front (Plate 197) and treble-end side (when closed).

Plate 188 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the lid is split into three parts by a longitudinal cut over the nameboard (extending the length of the instrument) and a short lateral cut over the right-hand cheek.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 189 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the lid is split into three parts (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 190 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the spine at the bass end—one of the two three-screw butt hinges connecting the main lid with the spine.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 191 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the keywell flap, hinged to the main lid with four brass butt hinges.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 192 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the lockboard, hinged to the inside of the keywell lid flap with two two-screw brass butt hinges (viewed from the spine side of the instrument).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 193 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the lockboard, hinged to the inside of the keywell lid flap with two two-screw brass butt hinges.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 194 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the lockboard standing vertically, functioning as a support for a book of music.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 195 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble-end front lid flap (closed)—the back edge of the flap is hinged to the main lid with three two-screw brass butt hinges.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 196 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble-end front lid flap (open)—the back edge of the flap is hinged to the main lid with three two-screw brass butt hinges.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 197 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble-end front lid flap (closed)—treble-end front corner; convex running mould, with overhang.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Music Desk

• There is no internal provision for a sideways-folding music desk fitted to the back of the nameboard, which when extended holds the lid open (a sideways-folding music desk became a commonly encountered feature of square pianos during the 1790s).

• The only provision for holding a music book or music sheets in place is a solid wooden ledge fitted near the edge of the inside face of the hinged lockboard (to be used with the lockboard open and standing in its vertical position) (Plate 198). This means that when a music score is used, the main part of the lid has to remain closed, the upright lockboard serving as a convenient prop for the score. The small treble-end front lid flap may be opened, at the player’s discretion.

• Solid mahogany.

• Wedge-shaped cross-section with curved apex.

• Length: 317.5 millimetres.

• Width: 18 millimetres.
Plate 198 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the wooden ledge fitted near the edge of the inside face of the hinged lockboard, for holding a music book or music sheets in place.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Stand

• Height from the floor to the upper surface of the naturals: Approximately 668 millimetres.

• Four square-tapered cabriole legs (Plate 199).

• Each pair of legs at the treble and bass ends is joined at the top by a 43-millimetre-high bar at the top edge, the ends of which are curved into the legs (Plate 200).

• At each end of the instrument, the lower part of each pair of legs is fixed by a 20 x 37 millimetre stretcher let into each leg. The bottom of each stretcher is 228 millimetres from the floor (Plates 201 and 202).

• When the piano is standing on its feet, each of these two stretchers—and therefore, each pair of legs at each end of the instrument—is held apart by a detachable dovetailed lower stretcher running the length of the case, in solid mahogany, measuring 40 x 38 millimetres (Plate 203).

Plate 204 shows the protruding dovetail (at the treble end of the detachable lower stretcher) inserted into its dry mortice and tenon socket. The socket has increased in depth because of wear; as a consequence, the top surface of the protruding dovetail sits slightly beneath the top surface of the stretcher that fixes the lower part of the legs.

The combination of trestle-and-stretcher structure with cabriole legs produces a hybrid stand; ‘it is rare to find cabriole legs with stretchers … in any … period’. 52

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52 Hayward, Antique or Fake, p. 134.
Plate 199 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): four square-tapered cabriole legs.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 200 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble end—the legs are joined at the top by a bar, the ends of which are curved into the legs.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 201 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble end of the instrument—stretcher let into the lower part of each leg.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 202 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble end of the instrument—stretcher let into the lower part of each leg.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 203 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): detachable lower stretcher, running the length of the case, which holds apart the pair of legs at each end of the instrument.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 204 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble end of the instrument—the protruding dovetail at the end of the detachable lower stretcher has sunk into a socket that has increased in depth because of wear.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
• Uniquely, within the context of late eighteenth-century square piano stand design, the top of each leg is attached to the case by an iron three-screw butt hinge (Plate 205).
• The two plates comprising each hinge originate from the late eighteenth century.
• Each hinge leaf is slightly tapered from the hinge barrel outward. This not only saves material and enhances the look, but also is typical of many eighteenth-century English butt hinges.
• If the hinges were added by someone other than Frederick Beck after the completed instrument had left Beck’s workshop, it is reasonable to assume that the mortice into which the hinge leafs are recessed would have been close to perfectly, if not perfectly, matched to the leaves’ edges. That the mortices cut into the wood are imperfect and rough (Plate 35) conforms with Frederick Beck’s ‘rushed cabinet-work’ and poor-quality carving style, suggesting that the hinges were incorporated into the instrument by Beck as part of its manufacture.
• The top front of the stand comprises a second detachable stretcher (Plate 206), the ends of which are inserted into slots at the top of both front legs (Plate 207).
• The top front detachable stretcher measures 45 millimetres on the face, and is 21 millimetres thick.
• The front detachable stretcher tapers off at each end into the curve of the leg (Plate 208), and is held aloft by two brass swivel hooks mounted at either end on the back (Plates 209 and 210). Each hook catches in a square brass catch that protrudes from underneath the case (Plate 211).
• The front stretcher creates the illusion that the instrument, legs and front stretcher are one article—thereby alluding to the French frame (Plate 212). When assembled, the legs and front stretcher also allude to the cabriole legs and shaped apron of the Louis XV style.
• When the detachable stretchers are removed, the hinged legs at each end can be quickly folded under the case (Plate 213).
• The front stretcher, legs and the main case of the piano contain similar and/or related decorative motifs.

Plate 205 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end of the instrument—iron three-screw butt hinge attaching the top of the rear leg to the bottom of the case.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 206 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): top front of the ‘frame’—detachable stretcher running between the top of each front leg.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 207 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end of the instrument—slot in the top of the front leg for the detachable front stretcher.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 208 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end of the instrument—the detachable front stretcher tapers off into the curve of the front leg.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 209 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end of the instrument—brass swivel hook on the back of the detachable front stretcher.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 210 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end of the instrument—brass swivel hook and catch (in situ).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 211 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end of the instrument—square brass catch (for the swivel hook) protruding from underneath the case.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 212 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the front stretcher creates the illusion that the instrument, legs and detachable front stretcher are one article.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 213 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end of the instrument—legs folded underneath.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Glue

- Hide (animal) glue.
- In the eighteenth century, hide glue was bought, as now, either in cake form, which must be smashed into manageable pieces, or as ‘pearls’ of a translucent brown colour. Steeped in water for several hours and then heated in a small copper pot, the mixture becomes a viscous fluid, which sets rapidly when allowed to cool. It has immense strength and no slippage. The hot glue allows the instrument maker to fit wooden components together very quickly and securely without having to resort to clamps. This is the only form of adhesive to be discovered in late eighteenth-century pianos. 55 Hide glue also dries brittle and hard, and is acoustically transparent; modern glues stay somewhat rubbery, insulating one piece of resonant wood from the next. 56

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56 I am indebted to Gavin Gostelow for this information.
Appendix A

Metalware

- Main lid: Two three-screw brass butt hinges (one at the treble end and one at the bass end) on the spine-side edge.
- Treble-end front lid flap: The spine-side edge is hinged to the main lid with three two-screw brass butt hinges.

Keywell Lid Flap

- Top section: The keywell flap is hinged to the main lid with four brass butt hinges on the spine-side edge. The hinges at the bass and treble ends are three-screw hinges, whilst the two in between are two-screw hinges.

Lockboard

- The lockboard is hinged to the inside of the keywell lid flap with two two-screw brass butt hinges.

Lock

- Brass, located at the centre upper edge of the lockboard.
- There is no escutcheon surrounding the keyhole (Plates 150, 188 and 193).
- The key for the lock is missing.

Wrest-Pins

- Four rows (Plate 214).
- The two wrest-pins for the last bass note are positioned adjacent to each other—as a continuation of the two treble-side rows (Plate 215).
- 122 wrest-pins for the 61-note compass.
- Iron.
- Unbored.
- Inserted directly into the soundboard, passing into the wrest-plank underneath.
- The wrest-pins project out of the soundboard 35 millimetres (Plate 216).
- Diameter: Approximately 5 millimetres (of the same type used in contemporaneous English harpsichords).
- The wrest-pins taper from the round into a fine oblong head (Plate 217).
Plate 214 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): wrest-pins.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 215 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): wrest-pins—the two wrest-pins for the last bass note (on the right) are adjacent to each other (as a continuation of the two treble-side rows).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 216 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the wrest-pins project out of the soundboard 35 millimetres (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 217 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the wrest-pins taper from the round into a fine oblong head.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Note Names

- Pitch names are handwritten on the soundboard, in ink, near each wrest-pin—as an aid for tuning and/or string replacement (Plates 218 and 219).
- It is not known if Beck wrote these note names. (There are, however, similar pitch names, written in what appears to be the same hand, on a Beck square piano dated 1782.)

Plate 218 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): pitch names, handwritten in ink on the soundboard, near each wrest-pin.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

57 See photograph in Beurmann, Das Buch vom Klavier, Plate 110g ‘Die Ton-Namen bei den Wirbeln’, p. 55.
Plate 219 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): pitch names, handwritten in ink on the soundboard, near each wrest pin (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

**Hand-Levers**

**Damper Raising**

- Witness marks on the top face of the hitch-pin block at the bass end suggest there were two iron hand-levers (each probably with a turned brass knob) running from the front towards the back of the case. These levers were located in the compartment in the left-hand cheek. The levers were associated with raising the dampers
  
  1. the left hand-lever raised the bass dampers (probably FF–b inclusive)
  2. the right hand-lever raised the treble dampers (probably c1–c3 inclusive).  

- The following permutations were possible
  
  1. the left hand-lever engaged: this raises the bass dampers (probably FF–b inclusive)

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58 Based on the disposition of hand-levers found on an instrument by Frederick Beck, dated 1782, described in ibid., p. 56, and Plate 110n ‘Unten der Dämpfungs-Eisenhebel mit Rückdruckfeder. Oben zwei Handhebel’, p. 57.
2. the right hand-lever engaged: this raises the treble dampers (probably c¹–c³ inclusive)
3. no levers engaged
4. both hand-levers engaged simultaneously: this raises all dampers simultaneously (probably FF–c³ inclusive).

Decoration

Main Lid (All Flaps Closed)

- Top: Running parallel with the edge, on the outside of the lid, plain mahogany veneer, 35 millimetres wide. Grain runs parallel with the spine.
- Then follows a simplified form of Tunbridgeware inlay running parallel with the edge, on the outside of the lid (Plate 220). This inlay is identical to that found on the outside of the case (Plate 221).
- Wax polished.

Plate 220 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): outside of the main lid—a simplified form of Tunbridgeware inlay running parallel with the edge.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 221 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): outside of the front of the case—a simplified form of Tunbridgeware inlay running parallel with the edge.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Simplified Form of Tunbridgeware Inlay

- Width (in total): 14 millimetres.
- Comprising
  1. a fine 1-millimetre-wide ebony stringer adjacent to a 1.5-millimetre-wide boxwood stringer
  2. a 9-millimetre band of cross-banded fine ribbon-grained brown timber (possibly kingwood/beech)
  3. a 2.5-millimetre band of alternating 25 millimetre-long diagonally cut boxwood and ebony stringers (Plate 222).
- The inlay carries right around all four sides of the top of the lid, right around the treble and the bass sides of the instrument, and right across the front of the instrument (carrying straight through the keywell vertical lockboard).
- The inlay is repeated along the bottom of the bar that goes between the top of both legs at both ends of the piano (Plate 223).
- The inlay runs along the bottom edge of the top front detachable stretcher, which slots into the top of both front legs (Plate 224).
- As each end of the front detachable stretcher curves down, the inlay follows the curved inside edge of the square-tapered cabriole shape of each leg, down to the leg termination (Plate 225). The inlay emphasises the sensuous form of each cabriole leg.
- The leading edge of the case (directly underneath the key fronts) is decorated with the simplified form of Tunbridgeware inlay (Plate 226).

Keywell Cheeks

- The same veneer pattern and woods as found on the nameboard—that is, banded top and bottom (each 18 millimetres wide) with plain mahogany
veneer, with a central band of fiddle-back mahogany veneer stained brown (44 millimetres wide) with stringers top and bottom (ebony-edged each side) with boxwood—continue around onto the treble and bass keywell cheeks (Plates 227 and 228).

- Varnished—‘using the standard spirit varnish of the [contemporaneous] furniture trade’.59

Plate 222 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): a simplified form of Tunbridgeware inlay (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 223 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble end—the simplified form of Tunbridgeware inlay is repeated along the bottom of the bar that goes between the top of both legs. The ends of the bar (and the inlay) curve into the legs.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

59 Cole, Broadwood Square Pianos, p. 102.
Plate 224 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the simplified form of Tunbridgeware inlay runs along the bottom edge of the front detachable stretcher.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 225 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end of the instrument, front leg—the simplified form of Tunbridgeware inlay follows the curved inside of the leg, down to the leg termination.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 226 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the leading edge of the case (directly underneath the key fronts) is decorated with the simplified form of Tunbridgeware inlay.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 227 Square piano by Frederick Beck (fl. ca 1756 – ca 1798)(London, 1780/86?): bass-end keywell cheek—veneer and inlay pattern.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 228 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble-end keywell cheek—veneer and inlay pattern (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Back (Spine) of the Instrument

- Oak.
- Plain, unveneered (Plate 229).
- At the treble and bass corners of the spine, there are five lapped dovetail joints (Plate 230).
- The top dovetail joint at the bass end is impressed with the stamp ‘I’ (Plate 230), suggesting that the case, as one of many, may have been assembled by someone other than Beck away from Beck’s workshop (such a scenario was not uncommon during the late eighteenth century).
Plate 229 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): unveneered spine.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 230 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): five lapped dovetail joints at the bass corner of the spine—the top joint is impressed with the stamp ‘I’.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Action

- The ‘action’ of a piano is ‘the system of levers, comprising chiefly the hammers, keys, and any additional levers or moving parts, by which the’ energy of the downward ‘movement of the finger on the key is transmitted to the hammer which sounds the string’. The function of the action is to transform a lower velocity of the key into a higher one for the hammer.

- Beck’s action is modelled on that of Zumpe: ‘The hammers are attached to a rail above the keys with their heads pointing away from the player.’ The hammers freely rotate around this fixed axis.

- A ‘jack’—comprising a stiff threaded brass wire surmounted by a little leather-covered solid beech head—is screwed into the far end of each key lever. As the key lever is pressed down at the front, the jack bumps against the underside of the hammer butt to make it fly up and hit the strings. The downward motion of the key is stopped when it contacts a layer of soft woven cloth extending beneath the front of the keyboard. The hammer shank continues under its own momentum, however, until it impacts on the strings and immediately falls back onto a cloth-covered rest rail (the ‘hammer rest rail’).

- There is no escapement.

- The action described above is commonly known as an ‘English single action’.

Hammers

Hammerhead Cores

- The hammerhead cores are original.

- Solid wood (possibly limewood), no larger than a small shirt button.

- 3 millimetres thick.

- Flattened, semicircular (Plate 231).

- Slightly and consecutively graduated in size (the largest at the bass end) (Plate 232).

- Radii (heights):

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63 In relation to the second extant Beck square piano dated 1780 (owner: Musikinstrumenten-Museum, Berlin), see photograph ‘Beck 007.jpg’ in ‘Beck, Frederick’ at hammerfluegel.net/.
64 ‘Wood from the European trees of the genus Tilia; also known as “linden”.’ Koster, Keyboard Musical Instruments in the Museum of Fine Arts, Boston, p. 331.
1. f³: 5 millimetres
2. c³: 5 millimetres
3. f²: 6 millimetres
4. c²: 6 millimetres
5. f¹: 6 millimetres
6. c¹: 6 millimetres
7. f: 6 millimetres
8. c: 6.5 millimetres
9. F: 7 millimetres
10. C: 7 millimetres
11. FF: 7 millimetres.

Hammerhead Covering

• The hammerhead leathering may be original.
• Two thin foundation layers of brown vegetable-tanned\textsuperscript{65} leather, overlaid with approximately 1 millimetre of firm, fibrous buff leather stretched tightly around it (Plate 231).\textsuperscript{66}
• The outer layer of leather is 3 millimetres deep.\textsuperscript{67}
• This is a decisive move away from Zumpe’s comparatively thinner outer layer of leather—which produces a sweet, light and percussive style of voicing. The tone created by Beck’s 3-millimetre-deep outer layer of leather is more mellow than that of Zumpe’s pianos.
• The hammerheads point away from the player.
• Hammerhead leathers are glued to the hammerhead cores only on the sides; there is no glue under the surface that strikes the strings.

\textsuperscript{65} See ‘Tanning’, in Appendix Q, this volume.
\textsuperscript{66} Based on a description of the voicing of John Broadwood’s 1790s square pianos, in Cole, \textit{Broadwood Square Pianos}, p. 91.
\textsuperscript{67} This is normal for Beck. In relation to the second extant Beck square piano dated 1780, see photograph ‘Beck 004.jpg’ in ‘Beck, Frederick’ at hammerfluegel.net/. See also photograph ‘Beck_um_1782_13.jpg’ in ibid.
Plate 231 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end—flattened, semicircular wooden hammerhead cores for the first four notes (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 232 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the wooden hammerhead cores are slightly and consecutively graduated in size—the largest are at the bass end (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Hammer Shanks

- Flat tapered slips of solid mahogany, rectangular in section (Plate 233).
- The grain of the wood runs in the direction of the shank.
- Wider at the hinge end than at the hammer end.
- 2–3 millimetres thick.
- Width gently graduated in size.
- Each hammer shank is hinged to the hammer rail by a thin strip of leather (Plates 234 and 235). Michael Cole observes:
  
  Grove’s Dictionary, 1980 edition, [informs us] that square piano hammers are hinged with parchment or vellum. Do not believe it. In thirty odd years I have only once seen hammers hinged with vellum. This was a Fredrick Beck, c. 1788, and its touch was terrible. However, it may have been original as the hammers, though apparently original, did not have guide-pins. Dampers, you understand, need vellum or parchment hinges to maintain their alignment.  

- Half the length of each leather hinge is kept firmly in place by the wooden hammer rail (Plate 236).
- The wooden hammer rail comprises two pieces (a top cover rail and a bottom rail) (Plate 237) between which sits the keyboard-side half of each leather hinge.
- In order to keep the leather hinges in position, the top cover rail is screwed tightly to the bottom piece with seven screws. At some stage, the treble-end screw has been so tightly screwed in that the end of the top cover rail has split; a ‘repair’ has been made by cutting the split section out, exposing the leather hinges of the top two hammer shanks (Plate 235). The screw hole in the bottom rail reveals that the treble-end screw has been moved to the left.
- The hammer rail is 36 millimetres wide.
- The hammer rail is supported by two vertical stiff brass wires, threaded at each end (Plates 238 and 239).
- Each hammer rail support wire passes vertically downwards into the keyframe between the specially shaped sides of two key levers (Plates 240 and 241).
- The treble-end hammer rail support wire passes between b¹ and c².
- The bass-end hammer rail support wire passes between B and c.
- Each hammer shank is guided by a single vertical metal pin that passes through a slot in the shank (Plate 242).

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• The lower end of the metal pin is secured in the hammer rest rail.
• The top surface of the hammer rest rail is covered with a thin strip of woven white cloth. The function of this cloth is to reduce the noise of the hammer shanks when, having rebounded from the strings, they fall onto the hammer rest rail (Plates 243 and 244).
• The height of the vertical metal pin that passes through each of the hammer shanks is 17 millimetres (from the top of the thin strip of woven white cloth to the top of the metal pin).
• The hammer shanks are almost imperceptibly graduated in size—the largest at the bass through to the smallest at the treble.

Plate 233 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end—hammer shanks for the first five notes (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 234 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): each hammer shank is hinged to the wooden hammer rail by a thin strip of leather (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 235 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble end—leather hinges for the top two hammer shanks (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 236 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): wooden hammer rail (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 237 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the bass end of the wooden hammer rail, viewed from the keyboard side (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 238 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): two vertical stiff brass wires support the wooden hammer rail.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 239 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the treble-end vertical stiff brass wire that supports the wooden hammer rail (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 240 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the bass end of the hammer rail, viewed from above—the bass-end stiff brass supporting wire passes between the specially shaped sides of two key levers (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 241 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the bass-end supporting wire passes between the specially shaped sides of two key levers (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 242 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): hammer shank guide-pins (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 243 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end—the hammer shank guide-pins and the hammer rest rail (covered with a thin strip of woven white cloth) for the first 10 notes (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 244 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): hammer rest rail, covered with a thin strip of woven white cloth (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Jacks

- The jack transmits the motion of the key lever to the butt of the hammer shank (hammer butt). An upright element, the jack comprises a stiff threaded brass wire surmounted by a little leather-covered solid beech head (commonly called ‘the old man’s head’). The wire is attached directly to the key lever (Plates 245 and 246).
- The wooden cores, and the leather covering of the jacks, are original.
Dampers

- A set of lightweight solid mahogany levers, suspended from the inside back of the case above the hitch-pin plank, one for each note (Plates 247 and 248).
- The mahogany damper levers are very crudely made. It is probable they are not original; the damper levers were already part of the piano when the current owner purchased the instrument.
- Each damper lever has a single vellum hinge (Plate 249). (‘Dampers … need vellum or parchment hinges to maintain their alignment.’)
- The back end of each damper lever rests on a horizontally protruding ledge that is glued to a hinged wooden rail.
- The horizontally protruding ledge is located at the vertical halfway point of the hinged wooden rail, and comprises the top face of a triangular cross-section batten.
- The back face of the triangular batten is glued to the front of the hinged wooden rail located in a cut-out at the top edge of the spine.
- A strip of woven red cloth is glued along the top face of the triangular batten, so that the back ends of the damper levers do not clatter (Plate 250).
- The hinged wooden rail (fitted into a cut-out at the top of the spine) begins near the bass-end main lid hinge, and extends towards the treble end of the spine, ending approximately five-eighths of the way along the length of the instrument (Plate 251).
- When the dampers are in their rest position, the top and back faces of the hinged wooden rail sit flush with the top edge and back of the spine (Plate 252).
- As the hinged wooden rail swivels slightly backwards, all dampers are raised simultaneously (Plate 253).
- The hinged wooden rail can swivel backwards to a much greater degree than would be necessary for the normal raising of dampers within the context of playing; this arrangement enables the damper levers to be raised high enough for access to the hitch-pins during string replacement (Plate 254). (‘The earliest dampers were operated by little whalebone stickers, pinned into a tiny mortise in the damper-lever. This arrangement [made] … it impossible to raise them clear of the strings, [making] … string replacement rather difficult.’)

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69 Ibid., p. 3.
70 Hackett, ‘(2) An Early London Square Piano Made for Longman, Lukey & Co. c. 1774’.
Plate 245 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): a jack—note the leather-covered ‘old man’s head’.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 246 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): jacks (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 247 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): mahogany damper levers.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 248 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): mahogany damper levers (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 249 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end—first wooden damper lever; vellum hinge (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 250 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end—the back end of the damper levers rest on a horizontally protruding ledge, comprising the top face of a triangular cross-section batten, which is glued to a hinged wooden rail fitted into a cut-out at the top of the spine.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 251 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): spine-side view—the hinged wooden rail begins near the bass-end lid hinge (in this image, near the left-hand side of the hinge on the right) and extends towards the treble end of the spine, ending about five-eighths of the way along the length of the instrument.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 252 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): spine-side view—when the dampers are in their rest position, the top and back faces of the hinged wooden rail sit flush with the top edge and back of the spine.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 253 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): spine-side view—as the hinged wooden rail swivels backwards, all dampers are raised simultaneously.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 254 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the bass end of the hinged wooden rail, swivelled backwards to a much greater degree than would be necessary for the normal raising of dampers within the context of playing.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Damper Lever Push-Up Rods

- Within the context of normal playing—that is, when all dampers have not been simultaneously raised—each damper lever rises because of its interaction with a damper lever push-up rod.
- Each damper lever push-up rod sits on a padded section at the back end of the key lever (Plate 255). Each rod has a punched circular leather head component mounted on top (Plate 256).
- Each damper lever push-up rod passes vertically through a hole at the front of the hitch-pin block.
- Vertical motion at the back of the key lever causes the damper lever push-up rod to rise or fall (Plate 257). As the push-up rod presses upwards against the underside of a damper lever, the damper lever rises; as the push-up rod falls, so too does the damper lever.
- Wood.\textsuperscript{71}
- Punched circular leather head component—diameter: 4–5 millimetres.

Damper Pads

- A thick pad of soft white cloth (unlike Zumpe’s oil-tanned leather block) is located at the proximal end of each damper lever (Plate 258). These cloth pads are the result of recent restoration. Originally, Beck may have used an oil-tanned leather block, in the style of Zumpe. He may also have used soft cloth pads (a Beck square piano dated 1782,\textsuperscript{72} housed in the Museum für Kunst und Gewerbe, Hamburg, has original soft cloth damper pads).
- The thick pad of soft cloth is carefully positioned so as to come to rest on the appropriate pair of strings as soon as the finger releases the key.\textsuperscript{73}
- There are dampers only to c\textsuperscript{3} (inclusive). The top five notes are un-damped. This is typical of Beck’s instruments, and is designed to increase the resonance in the treble through the sound produced by sympathetically vibrating un-damped strings (Plates 259 and 260). No other maker of square pianos followed this damping pattern.
- Damper lever length:
  1. f\textsuperscript{2}: 59 millimetres
  2. c\textsuperscript{2}: 66 millimetres
  3. f\textsuperscript{1}: 77 millimetres
  4. c\textsuperscript{1}: 82 millimetres
  5. f: 92 millimetres

\textsuperscript{71} See ‘History of Restoration’, below.
\textsuperscript{72} See photograph in Beurmann, \textit{Das Buch vom Klavier}, Plate 110a ‘Das Tafelklavier von Beck’, p. 54.
\textsuperscript{73} Cole, \textit{Broadwood Square Pianos}, p. 33.
6. c: 101 millimetres
7. F: 110 millimetres
8. C: 115 millimetres
9. FF: 123 millimetres.

Plate 255 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the padded section at the back end of a key lever.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 256 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): a damper lever push-up rod incorporating its punched circular leather head component.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 257 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): each damper lever push-up rod passes vertically through a hole at the front of the hitch-pin block (vertical motion at the back of the key lever causes the damper lever push-up rod to rise or fall) — note that the original wooden rod has been replaced with a brass rod.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 258 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end—first five damper levers. There is a thick pad of soft white cloth at the proximal end of each damper lever.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 259 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the top five notes are un-damped.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 260 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the top five notes are un-damped.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

**Damper Lever Springs**

- Each damper lever is fitted with a spring comprising a thin brass wire (Plates 261 and 262). Pressure from this spring increases the damping efficiency of the soft cloth pad located at the proximal end of each damper lever (the wire spring causes the damper lever to be pressed against the strings more firmly than would otherwise be the case).
- The back section of each spring passes upwards through the hinged wooden rail that is located in a cut-out at the top edge of the spine.
- The back end of each spring terminates flush with the back (vertical) face of the hinged wooden rail (Plate 263).
- The front end of each spring passes over (and from the back to the front section of) the damper lever (Plates 261 and 262).
- The front section of each spring presses against a small square pad of soft blue cloth, which is located on the top and towards the front of the damper lever (Plates 259–62). The blue cloth pad enables a comparatively frictionless
sliding interaction to take place between the spring and the cloth pad. Any noise produced by this interaction is minimised.

- The damper spring wires (as well as the associated blue cloth pad on the top of the damper lever) are not typical of Beck’s instruments, and have been added at a later date. Usually, Beck used baleen strips approximately one-seventh of the length of each wooden damper lever, in a manner similar to that of Zumpe (Plate 264). Normally, the top of each wooden damper lever would be bare (this is because with baleen strips, no small square pad of soft cloth is required on the top of the damper lever to mitigate friction and noise).

Plate 261 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): viewed from the bass end—each damper lever is fitted with a thin brass wire spring (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 262 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): damper lever springs (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 263 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the back ends of the two bottom damper lever springs are just visible (as two ‘dots’) in the back (and near the top face) of the hinged wooden rail (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 264 Square piano by John Betts(?) (1755–1823), possibly Longman & Broderip or James Henry Housten (London, late 1770s–90s?): baleen damper lever springs, in the manner of Zumpe (detail).

Source: ANU School of Music Keyboard Institute Collection, Canberra. Photo by the author.

• Damper spring wire length (from the insertion point into the spine to the front end): c¹, 42 millimetres; FF, 59 millimetres.
• Each damper spring wire is approximately half the length of its wooden damper lever.
• Cloth-lined damper cover rail: Missing. The bass end of a wooden cloth-lined damper cover rail would have plugged into a rectangular slot cut into the inside bass end of the case (Plate 265). (‘The function of the cloth-lined damper cover-rail was to prevent the lightweight damper-levers from flying up and clattering on the underside of the main lid.’)⁷⁴ The damper cover rail may have been decorated with a fine 1-millimetre-wide ebony stringer adjacent to a 1.5-millimetre-wide boxwood stringer running parallel close to the keyboard-side edge, in the same manner as that found on a square piano by Beck dated 1782.⁷⁵ The design of this decorative element is part of the simplified form of Tunbridgeware inlay found both on the 1782 piano and on Worgan’s piano.
• The treble end of the missing damper cover rail was fastened with an ‘L’-shaped threaded metal catch to a small wooden block located above the treble end of the hitch-pin block (Plate 266).

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⁷⁵ See Beurmann, Das Buch vom Klavier, Plate 110c ‘Hammer-stuhl-Leiste mit Intarsie’, p. 55. The instrument is owned by the Museum für Kunst und Gewerbe, Hamburg.
Plate 265 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): rectangular slot cut into the inside bass end of the case, associated with a (missing) wooden damper cover rail.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 266 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): small wooden block, upon which was fastened—with a small metal ‘L’-shaped threaded catch—the treble end of the (missing) wooden damper cover rail.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Mutation Stops

Nag’s Head Swell

- A nag’s head swell is a mechanism operated by a pedal (or sometimes by a knee-lever) that modifies the piano’s volume by lifting either a part of or the entire lid. During the 1780s and 1790s, the nag’s head swell became a commonly encountered accessory.
- The entire mechanism is missing.
- Witness marks suggest that a nag’s head swell (comprising the entire main lid and treble-end front lid flap concurrently) was incorporated into the instrument. Evidence for a missing nag’s head swell can be found on the front underside of the main lid, where there is a worn depression that may have received the top of a wooden actuating rod (Plates 267 and 268). This depression strongly suggests that the wooden actuating rod of a nag’s head swell has often been brought into play. The depression may also have resulted from the fact that the nag’s head swell comprises the entire main lid and treble-end front lid flap concurrently, rather than just the treble-end front lid flap; this makes it very heavy.
- A rectangular hole has been made through the bottom boards of the instrument to provide access for the actuating rod operated by the (missing) pedal that opens and closes the main lid (Plates 269 and 270).
- A rectangular hole has been made in the keyframe—through the intersection of the front end of the treble brace that joins the balance rail with the back touch rail (Plates 271 and 272). This rectangular hole is in perfect alignment with the rectangular hole in the bottom boards.
- A near-rectangular hole has been made by cutting into the sides of two adjacent key levers (b1 and c2) (Plates 273 and 274). This hole is in perfect alignment with both the rectangular hole in the bottom boards and the rectangular hole in the keyframe. The three perfectly aligned holes would have allowed an actuating rod to pass unhindered from below the instrument, through the bottom boards, through the keyframe and through the key levers to the underside of the main lid.
- Witness marks on the bottom of the instrument suggest that an iron or brass plate set into the bottom of the case (with four screws) held a mounted fulcrum as part of a mechanism operated by a pedal (Plate 275). Although this may have been associated with the nag’s head swell, it seems more likely that it was associated with the harp stop.\textsuperscript{76}

\textsuperscript{76} See ‘Harp Stop’, below.
Plate 267 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the worn depression on the front underside of the main lid that may have received the top of an actuating rod for the (missing) nag’s head swell.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 268 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the worn depression on the front underside of the main lid that may have received the top of an actuating rod for the (missing) nag’s head swell (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 269 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): a rectangular hole through the bottom boards provides access for the nag’s head swell actuating rod that opens and closes the main lid.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 270 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the rectangular hole through the bottom boards that provides access for the nag’s head swell actuating rod (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 271 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the rectangular hole through the keyframe that provides access for the nag’s head swell actuating rod (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 272 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the rectangular hole through the keyframe that provides access for the nag’s head swell actuating rod (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 273 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the near-rectangular hole made by cutting into the sides of two adjacent key levers (b₁ and c²)—this hole provides access for the nag’s head swell actuating rod (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 274 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): b₁—the cut made into the treble-side edge of the key lever. The cut forms one half of the near-rectangular hole between b₁ and c² that provides access for the nag’s head swell actuating rod (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 275 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): witness marks on the bottom of the instrument suggest that an iron or brass plate holding a mounted fulcrum comprised part of a mechanism operated by a pedal (or knee-lever).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Nag’s Head Swell Pedal

• ‘When an 18th century [English] square piano is seen to have a pedal, it is most likely to be for [a nag’s head] swell.’ 77 In some instances, a pedal may operate the raising of dampers; the earliest known example of a pedal-operated damper-raising mechanism on a square piano is an instrument dated 1775, by Adam Beyer. On late eighteenth-century English square pianos, the pedal for the nag’s head swell is most commonly located towards the right-hand side.

• Missing pedal and pedal leg.

• Missing pedal leg. It is common to find that the pedal(s) and pedal leg(s) are missing on surviving late eighteenth-century square pianos.

• The nag’s head swell would have been activated by a pedal.

77 Cole, The Pianoforte in the Classical Era, p. 76.
• Unusually, a missing pedal appears to have been located under the instrument at the centre. The central location of the pedal is suggested by two carefully plugged parallel rectangular holes on the underside of the long detachable stretcher that holds apart the stretchers in the lower part of the legs (Plate 276). These two holes are positioned at the centre of the long stretcher. There can be little doubt that originally these holes would have received the top end of a vertical wooden pedal support. The back end of a pedal would have been hinged to this support.

• Perhaps Frederick Beck removed the pedal, the pedal support and its associated mechanism prior to George Worgan taking delivery of the instrument. (Both Beck and Worgan may have decided that the piano’s stand could not be dismantled quickly and easily enough if a pedal was permanently attached to the long detachable stretcher running the length of the case.) If this is so, there are resultant implications.

1. Beck constructed the stands for his pianos using pre-cut stretchers within which the holes for a pedal support were already present. If this is so, in this instance, Beck must have plugged the pre-cut holes in order to exclude the pedal support.

2. Beck had several completed instruments from which Worgan selected a preferred piano. Worgan’s chosen piano included a pedal-operated nag’s head swell with the pedal located in the centre. In order to meet Worgan’s specifications, Beck made the necessary modifications by removing the nag’s head swell pedal support and pedal.

It is also possible that Worgan’s instrument had a pedal-operated nag’s head swell when he purchased it, and sometime afterwards the mechanism was removed (possibly as a ‘modernising’ gesture at a time when the nag’s head swell had become unfashionable), with evidence of its existence obscured.

If this is so then such work would have to have been done in Australia—because since its arrival at Botany Bay in 1788, the piano has most likely never left Australian shores.
Plate 276 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): carefully plugged parallel rectangular holes on the underside of the long detachable stretcher that holds apart the stretchers in the lower part of the legs.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Nag’s Head Swell Pedal Hinge-Point Stretcher

On late eighteenth-century square pianos, the nag’s head swell pedal is usually hinged to a stretcher located near the floor between the right-hand legs. The pedal (hinged on its right) usually points to the left.

• On Worgan’s square piano, there is no evidence of a stretcher having existed near the floor between the right-hand legs.
• The pedal (and its hinge point) is missing.

Lid Rebate

• Normally in instruments fitted with a nag’s head swell, ‘a shallow rebate runs around the underside of the lid where a strip of [closely spun] woollen cloth is fitted, so that the closing of the lid does not make a clatter’ (Plate 277).\(^7\) This rebate, and any evidence of a missing strip of woollen cloth, cannot be found on the underside of the lid of Worgan’s 1780/86? Beck instrument.

\(^7\) Ibid., p. 76.
Plate 277 Square piano by John Betts(?) (1755–1823), possibly Longman & Broderip or James Henry Housten (London, late 1770s–90s?): shallow rebate running around the underside of the lid where a strip of closely spun woollen cloth is fitted.

Source: ANU School of Music Keyboard Institute Collection, Canberra. Photo by the author.

Harp Stop (Also Called a Buff Stop)

The harp stop was ‘especially prevalent in English square pianos between 1770–1790’.79

• Missing.
• Screw holes on the front face of the hitch-pin block reveal that a harp stop was incorporated into Worgan’s Frederick Beck piano (Plate 278).
• Two narrow strips of wood are loosely attached (using the missing screws) along the front face of the hitch-pin block just beneath the strings. When activated, the lower strip slides horizontally to the right. As it does so, it engages the upper strip by means of recessed triangular dogs (Plates 279 and 280). The triangular dogs lift the upper strip until its covering of soft buckskin presses lightly against the underside of the strings very ‘near to

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79 Ibid., p. 378.
the extremity of their sounding lengths’ (that is, near to the nut-pins).80 This causes ‘the upper partials’ of the sound ‘to be restricted’.81 Simultaneously, the lingering attenuation of the sound is cut short. To eighteenth-century listeners, the resultant sound would most probably have resembled a gut-strung harp or a lute.

- Witness marks on the top face of the hitch-pin block at the bass end suggest that two iron hand-levers were associated with damper raising. In the absence of any witness marks for a third hand-lever, it does not seem likely that the harp stop was activated by a hand-lever.

- The block inside the bass end of the case has a specially cut recess to allow for an internal lever to pass between the action frame and the bass end of the case. The recess is shaped, by deeper cutting, up to the underside front of the beginning of the hitch-pin block (Plate 281). The shaped recess could have allowed for a steel jerk-compression spring (hidden from casual view) associated with a mutation stop.82 The foundation point for the jerk-compression spring lever was under the bottom of the instrument. The lower end of the spring rose through the square hole (cut in the bottom of the instrument at a slightly oblique angle from front to back) (Plate 282).

- Both the location and the direction of movement (implied by the recess cut into the bass end of the case) suggest that the spring may have been associated with operating the harp stop. It seems odd, however, that the tension and power inherent in a steel jerk-compression spring would be needed to operate a harp stop—which could be easily and effectively engaged by a hand-lever (some square pianos incorporating a harp stop—by makers such as Christopher Ganer—suggest that the harp stop may have been operated by a pedal under the left foot). Witness marks on the bottom of the case may also be associated with the harp stop (Plate 275).

80 Ibid., pp. 377–8.
81 Ibid., p. 378.
82 See Beurmann, Das Buch vom Klavier, Plate 110l ‘Die Seil-Rolle’; Plate 110m ‘Unteres Ende der Dämpfungs-Eisenhebedruckfeder’; and Plate 110n ‘Unten der Dämpfungs-Eisenhebel mit Rückdruckfeder. Oben zwei Handhebel’, p. 57. See also photograph ‘Beck_um_1782_16.jpg’ in ‘Beck, Frederick’ at hammerfluegel.net/.

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Plate 278 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): screw holes on the top face of the hitch-pin block are for the (missing) harp stop.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 279 Square piano by John Betts (?) (1755–1823), possibly Longman & Broderip or James Henry Housten (London, late 1770s–90s?): the two strips of wood comprising the harp stop—the stop is unengaged, therefore the top face of the upper strip of wood does not press against the underside of the strings.

Source: ANU School of Music Keyboard Institute Collection, Canberra. Photo by the author.
Plate 280 Square piano by John Betts(?) (1755–1823), possibly Longman & Broderip or James Henry Housten (London, late 1770s–90s?): the two strips of wood comprising the harp stop—the stop is engaged. The lower strip of wood has moved to the right, as a consequence of which the recessed triangular dog has forced the upper strip of wood upwards. The top face of the upper strip of wood (covered by soft buckskin) presses lightly against the underside of the strings.

Source: ANU School of Music Keyboard Institute Collection, Canberra. Photo by the author.

Plate 281 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): recess cut into the inside of the block at the bass end of the case.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 282 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end—square oblique hole cut through the bass boards.
Source: Stewart Symonds Collection, Sydney. Photo by the author.

Harp Stop Pedal

• Missing.
• Other square pianos incorporating a harp stop—by makers such as Christopher Ganer—suggest that the harp stop may have been operated by a pedal under the left foot. Commonly, the harp stop pedal would have been located to the left-hand side of the instrument, and hinged to a stretcher located near the floor between the left-hand legs.
• As there is no evidence of a stretcher having existed near the floor between the left-hand legs, the missing pedal may have been hinged in another manner.
• Two screw holes and a fade line suggest that there was, at one stage, a batten running along the bottom edge of the spine of the instrument (Plate 283).
• Because the spine is plain and unveneered, there is no reason to apply a batten as protection. The batten may have been a strengthening component, associated with an attachment point for a vertical pedal support. On the other hand (and more probably), the function of the batten may simply have been to ensure that when the instrument’s spine was placed against a wall, the hinged wooden rail located in the cut-out at the top of the spine had enough room to move backwards. The batten may also have functioned as a knee-lever hinge support.
• Whatever mechanism was operated by the pedal, the mechanism may have been attached to the pedal via a cord.
• The fact that Beck may have opened a dealership in Paris, sold pianos to Parisian customers, or even operated a workshop in Paris, may have encouraged him to include pedal-operated sound-modifying mechanisms in his square pianos. This is because the presence ‘of a pedal-operated mechanism to modify the sound (either through a Nag’s Head Swell or a Harp (Buff) Stop reflects a fashion that was exceedingly popular, especially in Paris, until at least 1810’.83

Plate 283 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): witness marks for a missing batten running along the bottom edge of the spine.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Mutation Stop Hand-Lever and Pedal: Summary

- Two hand-levers:
  1. the left hand-lever raises the bass dampers (FF–b inclusive)
  2. the right hand-lever raises the treble dampers (c¹–f³ inclusive).
- A pedal operates the nag’s head swell.
- A pedal? operates the harp (buff) stop.

Keyboard

Compass

- Fully chromatic: FF–f³ (61 notes) (Plate 284).
- Keywell span: 831 millimetres.
- Keyboard width at natural fronts: 828 millimetres.
- Three-octave span (F–f³): 483 millimetres.
- The ‘three-octave span’ (Stichmaß) is the distance from the left-hand side of the F key to the left-hand side of the f³ key—that is, the width of the three octaves in the centre of the keyboard. The three-octave span measure is taken as the standard reference when comparing various keyboards, rather than a single-octave span, since old keyboards can be slightly variable, owing either to the maker’s lack of precision or to subsequent distortion of the wooden keys in varying conditions of humidity. The three-octave span is a fairly reliable parameter, and will usually remain constant for any given maker over a period of many years. It can be used to distinguish between the work of different makers when the instruments are either unsigned or possibly fraudulently inscribed. An accurate single-octave span is obtained by dividing the three-octave span by three.84

The three-octave span of the 1780/86? Beck piano (483 millimetres) is a mere 1 millimetre wider than that of a Beck piano dated 1782\textsuperscript{85} (482 millimetres).\textsuperscript{86} This miniscule difference may be due to Beck’s lack of precision, or to distortion of the wooden keys resulting from humidity, and lies within the realms of the expected.

- The single-octave span of the 1780/86? Beck piano (161 millimetres) is a mere 1 millimetre wider than that of a Beck piano dated 1774\textsuperscript{87} (160 millimetres).\textsuperscript{88} This miniscule difference may be due to Beck’s lack of precision, or to distortion of the wooden keys resulting from humidity, and lies within the realms of the expected.

Plate 284 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): keyboard.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

**Keyframe**

- The ‘keyframe’ is the wooden framework upon which the key levers rest.\textsuperscript{89}
- Oak and pine.
- Three-rail keyframe: Three transverse members—running parallel both with each other and with the keyboard—are joined at each end with a single beam running from the front to the back (Plate 285). The three transverse members are (from the front to the back)
  1. a ‘front touch rail’
  2. a ‘balance rail’, which serves as a fulcrum for the key levers; a ‘balance rail pin’ (made of plated brass wire 2–3 millimetres in diameter) that passes through a mortice in the key lever at the fulcrum, and is driven

\textsuperscript{85} The 1782 instrument is owned by the Museum für Kunst und Gewerbe, Hamburg.
\textsuperscript{86} See Beurmann, *Das Buch vom Klavier*, p. 57.
\textsuperscript{87} The 1774 instrument is owned by the Bachhaus, Eisenach, Germany.
\textsuperscript{89} Cole, *The Pianoforte in the Classical Era*, p. 381.
into the balance rail (Plate 286); the balance rail pin, which prevents the key lever from slipping in and out or twisting from side to side.\footnote{351}

3. a ‘back touch rail’, which supports the distal ends of the key levers.

- Front touch rail: Oak. A strip of woven green cloth is glued along the top face of the front touch rail.
- Balance rail: Pine (possibly Scotch pine, \textit{Pinus sylvestris}).
- Back touch rail: Pine. A strip of woven green cloth is glued along the top face of the back touch rail. (Because the original strip of cloth on both the front and the back touch rails has been lost, any possibility of determining the original key dip has also been irretrievably lost.)
- Three separate wooden bars (running from the front to the back) connect the balance rail with the back touch rail (Plate 285). These bars strengthen the entire keyframe as well as the balance rail.
- The workmanship evidenced by the three longitudinal wooden bars connecting the balance rail with the back touch rail is rough.
- At each of the two outside edges of the keyframe, there is a protective ‘side fence’ (Plate 287).


Source: Stewart Symonds Collection, Sydney. Photo by the author.

\footnote{351} Hubbard, \textit{Three Centuries of Harpsichord Making}, p. 351.
Plate 286 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): balance rail pins.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 287 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): bass end—keyframe protective ‘side fence’.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Condition

- There is considerable damage to the protective side fence at the treble-end back edge of the keyframe.
- The bass-end side fence is also damaged, but not nearly as extensively (Plate 287).

Key Levers

- Lime.
- Front-guided, with a single vertical drawn-brass pin for each key lever (Plate 288). Beck’s use of front guide-pins has its origins in English harpsichord making (English harpsichord key levers are almost always front-guided). Front guide-pins are the norm for late eighteenth-century English square pianos.
- A single pin at the balance rail (Plate 289).
- Height of front guide-pins (from top of cloth strip): 8 millimetres.
- Height of pins on balance rail (from bare wood): 14.5 millimetres.
- A ‘front guide-pin’ design comprises a ‘vertical metal pin driven into the front touch rail of a three-rail keyframe. This pin preserves the lateral alignment of the key.’\(^91\)

Many late eighteenth-century square piano makers have a distinctive approach to the way the key levers are guided. In this piano, Beck cuts a mortice for a front guide-pin under the middle of each of the natural key heads (Plate 290), as well as under the front of each sharp. ‘This is a commonly encountered feature in all kinds of pianos after 1790’, \(^92\) and has its origins in the English harpsichord. The front guide-pin design of this instrument represents a departure from Beck’s rear rack-guided system of ca 1772, when his square pianos were more thoroughly modelled on those of Zumpe.

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\(^92\) Ibid., p. 380.
Plate 288 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): key lever front guide-pins.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 289 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): key lever front guide-pins and balance rail pins (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 290 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): mortice under the middle of a natural key head for the key lever front guide-pin.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Undercutting

- Behind the key head (Plate 291).

- A rounded profile at the balance rail (Plates 292 and 293). (This feature is foreign to English harpsichord making.)

- Nineteen key levers have shaved shoulders at the back (Plate 294). This is done in order both to ‘balance’ the key lever and to ‘lighten’ the touch. It is unlikely that this is Beck’s work, because each of the ‘shaved’ key levers has had one or two small lead weights inserted into the key head. For late eighteenth-century English piano makers, the insertion of lead weights into the key head (Plate 295), rather than close behind the key head (Plate 296), is an uncharacteristic approach to balancing shaved key levers. (‘Lead weights in the keys increase the mass inertia and have a bad name amongst organologists.’)

- In two instances—one treble and one tenor key lever—the insertion of a lead weight under the key head has proved to be so disastrous in relation to key weight and balance that severe undercutting behind the key head has been done to remedy the problem. There is no shaving of the shoulders at the back of these two key levers. In one instance (D⁰) there is both shaving of the shoulders at the back and severe undercutting behind the key head. The lead weight has been inserted in the apex of the undercutting behind the key head (Plates 297 and 298).

- One key lever without a lead weight has been severely undercut behind the key head (Plate 299).

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93 Skowroneck, Harpsichord Construction, p. 201.
Plate 291 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble end—undercutting behind the key head.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 292 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): treble end—undercutting and rounded profile at the balance rail.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 293 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): undercutting—rounded profile at the balance rail (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 294 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): undercutting—19 key levers have shaved shoulders at the back.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 295 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): two lead weights have been inserted into the head of a shaved key lever (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 296 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the characteristically English insertion of a lead weight close behind the head of a shaved key lever (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 297 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): D♯—the insertion of a lead weight combined with severe undercutting behind the key head (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 298 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): D♯—the insertion of a lead weight combined with severe undercutting behind the key head (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 299 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): one key lever without a lead weight has been severely undercut behind the key head (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
‘Cranked’ Key Levers

- Because the curved treble part of the bridge is placed near to the belly rail edge of the soundboard, the soundboard edge is not a straight line (Plate 300). As a result, some treble key levers are not straight, but are ‘cranked’—that is, deviated (Plate 301).

1. The highest 15 treble key levers (f\(^3\)–d\(^{#2}\) inclusive) are cranked or deviated to the left.\(^{94}\)

2. The highest seven treble key levers (f\(^3\)–b\(^3\) inclusive) are severely cranked.\(^{95}\)

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Plate 300 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the soundboard edge at the belly rail is not straight.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 301 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): a ‘cranked’ treble key lever—underside.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

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**Key Plates**

During the second half of the eighteenth century, black accidentals and ivory naturals were the prevailing style for piano keyboards in England.

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\(^{94}\) See also photograph ‘Beck_um_1782_18.jpg’ in ‘Beck, Frederick’ at hammerfluegel.net/.

\(^{95}\) See ibid.
The First Fleet Piano: A Musician’s View

Naturals

- Ivory key plates.
- In two pieces (Plates 302 and 303).
- 1 millimetre thick at the front, tapering towards the back (Plates 304 and 305).

Ivory was used in prodigious quantities for key plates in the eighteenth century. In 1780 the best makers were using ivories between 1.5 millimetres and 2 millimetres thick.96

- Length of key head: 36 millimetres. (The length of the key head is slightly shorter than the 41 millimetres that invariably became the standard for most late eighteenth-century London piano-making workshops.)
- Tail: Ranging between 94.5 millimetres and 98 millimetres.
- Width of the key head: 22 millimetres. The key head overhangs the top of the key front moulded cornice by 3 millimetres (Plate 304).
- Tail: Ranging between 11 millimetres and 13 millimetres.

Key Fronts

- Moulded varnished boxwood cornice (Plate 306). The shape of the key fronts is particularly beautiful, and is not consistent with that found on some of Beck’s other pianos. The key fronts of several Beck pianos are finished with an ovolo moulding with a protruding front lip placed in the lower half (see, as examples, Plates 20c, 20e, 20i, 43d, 43j and 43k). ‘The same form is observed in all [John] Broadwood pianos dating from the 1780s.’97 By way of comparison, the shape of the key fronts on a Clementi grand piano (1806/10?) is finished with an ovolo moulding with a protruding front lip placed in the upper half (Plate 416).

Key Front Moulded Cornice

- Depth: 5 millimetres at the top; 2 millimetres at the bottom (Plate 307).
- Clearance from the top of the natural keys to the bottom edge of the nameboard: Approximately 4 millimetres.
- There is no indication that woven cloth or felt has ever been glued to the bottom edge of the nameboard.

Plate 302 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): two-piece ivory key plate.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

97 Cole, Broadwood Square Pianos, p. 169.
Plate 303 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): two-piece ivory key plate (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 304 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): ivory key plate—1 millimetre thick at the front, tapering towards the back (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 305 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): ivory key plate—1 millimetre thick at the front, tapering towards the back (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 306 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): varnished boxwood moulded cornice (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 307 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): varnished boxwood moulded cornices (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Sharps

- Solid ebony (Plate 308). Many of Beck’s ‘contemporaries in London made their sharps of stained pearwood’ with only a thin cap of ebony glued on top’. Beck’s use of solid ebony for the raised part (playing surface) of the sharp key levers on Worgan’s piano not only brings him into alignment with the practice of his contemporary John Broadwood, but also suggests that Beck did not feel the need to keep costs down. It also suggests that he did not feel that solid ebony would create too heavy a touch.

  - C# length at base: 82 millimetres.
  - C# height from base: 11.5 millimetres.
  - C length at base: 84 millimetres.
  - C height from base: 10.5 millimetres.
  - C# length at base: 84 millimetres.
  - C# height from base: 10.5 millimetres.
  - C length at base: 82 millimetres.
  - C height from base: 10.5 millimetres.
  - C# length at base: 83 millimetres.
  - C# height from base: 11 millimetres.
  - CC# length at base: 84 millimetres.
  - CC# height from base: 11 millimetres.

98 ‘Wood from trees of the species *Pyrus communis.*’ Although identified ‘as having been made of pearwood’, such sharps ‘could be of the nearly indistinguishable apple, *Malus sylvestris,* regarded by some taxonomists as being in the same genus as pear and therefore called by them *Pyrus malus*. Koster, *Keyboard Musical Instruments in the Museum of Fine Arts, Boston,* p. 331.

• The key lever is stained with black ink on the sides and at the back of the solid ebony accidental, in order to give a good appearance at the keyboard (Plate 308).
• Height of sharps (at front) above the top of the naturals: 10 millimetres.
• Typically for English square pianos, the height of the sharps is not tapered from front to back.

Plate 308 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the solid ebony raised part of a sharp key lever (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Key Plate Score Lines

Key plate score lines ‘are made after the keyboard is assembled, and will line-up down the keyframe. Replacement [key plates] … rarely would have any [score] lines, and these would invariably be off from their neighbours, as the scribing tool was unique to [a] … builder.’

• A prominent single score line is located on the key head (Plate 309).
• The score line runs parallel to the junction between the key head and the tail.
• The distance between the key head junction and the scored line is 4 millimetres.

Plate 309 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): a prominent single score line, located on a natural key head front plate (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Key Plate Wearing

Given the shorter length of late eighteenth-century English piano natural key head front plates compared with those of the modern piano, the question arises as to whether or not late eighteenth-century players used the type of hand position—with extended, sometimes almost straight fingers—that many pianists use on the post-Lisztian keyboards of modern instruments. ‘Steinway, Bösendorfer, and many 21st century makers use 50 mm or even 52 mm’ versus the 41 millimetres commonly found in late eighteenth-century English pianos. ‘This makes an enormous difference to the look of the keys and to the manner in which they may be played.’

- Examination of the tail plates reveals no indentation (‘dishing’). This suggests that it was not customary to play between the sharps, even though there is ample space to play between them. An approach to the key lever that positions the fingertip towards the front of the natural key head is associated with

  1. the slightly ‘jabbing’ technique required to play instruments that have no escapement (such as Worgan’s 1780/86? Beck piano)

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2. a touch that ‘strokes’ the keys with a movement that draws backward from the fingertip towards the palm of the hand (some sixteenth, seventeenth and eighteenth-century music theorists describe this touch).\(^\text{102}\)

- Wearing of the key tops suggests that players of Worgan’s piano have preferred certain tonalities and ranges (Plates 284 and 310–13).

### Worn Naturals

- c\(^3\): Front edge and middle, pronounced indentation, extends to back scoring line.
- a\(^2\): Front edge, mild indentation; middle, pronounced indentation, overlaps front scoring line.
- g\(^2\): Front edge, moderate indentation; middle, pronounced indentation, extends to back scoring line.
- e\(^2\): Front middle, moderate indentation; middle, pronounced indentation, extends to halfway between scoring lines.
- d\(^2\): Front corners, moderate indentation.
- c\(^3\): Front edge, pronounced indentation; middle, mild indentation.
- b\(^1\): Front edge, mild indentation; middle, moderate indentation, overlaps front scoring line.
- a\(^1\): Front edge to middle, overlaps front scoring line, pronounced indentation.
- e\(^1\): Front edge to middle, pronounced indentation.
- c\(^1\): Front edge to middle, mild indentation.
- g: Middle, extends to front scoring line, moderate indentation.
- f: Pronounced indentation on the front edge; pronounced indentation in the middle.
- e: Front edge and middle, pronounced indentation, overlaps front scoring line.
- d: Middle and front edge, pronounced indentation, overlaps front scoring line.
- c: Front edge to middle, extends to front scoring line, pronounced indentation.
- A: Front edge, mild indentation.
- G: Front edge and corners, moderate indentation.
- F: Front edge and corners, mild indentation.

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Worn Sharps

- Wear is slight compared with the naturals.
- f#2: Top front, pronounced indentation.
- d#2: Top front, right-hand side, pronounced indentation.
- c#2: Top front, slight indentation.
- a#2: Top front, middle and right-hand side, pronounced indentation.
- a#1: Top front, pronounced indentation.
- g#1: Top front, middle, slight indentation.
- f#1: Front edge to middle, overlaps front scoring line, pronounced indentation.
- d#1: Top front, across entire top, pronounced indentation.
- c#1: Top front, across entire top, slight indentation.
- a#: Top front, right-hand side, pronounced indentation.
- g#: Top front, slight indentation.
- f#: Top front, right-hand side, moderate indentation.
- d#: Middle, moderate indentation.

Plate 310 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): certain key tops are worn from use.

Source: Stewart Symonds Collection, Sydney. Photo by the author.
Plate 311 Square piano by Frederick Beck (fl. ca 1756 – ca 1798 (London, 1780/86?): certain key tops are worn from use.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 312 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): naturals key top wearing from f³ to d¹.

Plate 313 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): naturals key top wearing from a to E⁵.

Source: Stewart Symonds Collection, Sydney. Photos by the author.

Implications

• Key wearing that is either pronounced or moderate is consistent with the registers, ranges and tonalities most commonly exploited by late eighteenth-century composers.

• Pronounced or moderate key wearing in the treble ranges from a¹ to c³. The keys of the octave c²–c³ are particularly worn; most Classic-era melodic lines strongly exploit this octave.
Appendix A

• Pronounced or moderate key wearing in the bass ranges from F to f; most Classic-era accompaniment material sits comfortably within this range.
• Key wearing suggests that the following tonalities have been preferred:
  1. C major
  2. G major
  3. D major
  4. F major
  5. B-flat major
  6. E-flat major
  7. A minor
  8. E minor
  9. G minor

The number of accidentals—that is, ‘black’ notes—associated with these tonalities never exceeds two sharps, or three flats. Consequently, the demands made on reading skills (at least until modulation into a more complex tonality occurs) are not great.

Commonly occurring late eighteenth-century tuning systems would have ensured that these tonalities sounded relatively ‘relaxed’, ‘pure’ and sonorous.

Key plate wearing, however, does not appear to be consistent with the fact that there is one key on the keyboard that tends to get more wear than any of the others … It is the D an octave above middle C [that is, d², 14 semitones above c¹].
A key signature of at least four sharps or four flats is needed before the D [d²] key gets relief from the sharp or flat key above and below it. ¹⁰³

Nevertheless, given that 1) indentation on the d² key head front plate is moderate, 2) the keys of the octave c²–c¹ are particularly worn, and 3) there is pronounced or moderate key wearing in the treble ranges from a¹ to c³, it is reasonable to conjecture that the piano has been ‘cherished as a musical instrument and not just held up as a silent monument to the wealth [or social aspirations] of its owner’. ¹⁰⁴

¹⁰³ Watson, Changing Keys, p. 42.
¹⁰⁴ Ibid., p. 42.
Stringing

- The strings extend diagonally to the right (the longest string beginning at the bass end, near the back corner) over a J-form soundboard bridge (Plate 164) to iron wrest-pins at the extreme right.
- Each string is anchored by means of an eyelet or ‘loop’ over a metal hitch-pin at the back of the case—that is, opposite the player (each metal hitch-pin is driven into the wooden hitch-pin block).
- Double-strung throughout.
- Graded diameter.

Bass

- The first 28 consecutive bass-note strings (FF–F# inclusive) are overspun—that is, each string has a drawn-brass ‘straight core around which a helical copper wire is wrapped’.\(^{105}\) These are modern replacements (using wire from Malcolm Rose) (Plate 314).

In square pianos of the 1770s and 1780s, if plain brass wire is used for the strings of approximately the two bottom octaves, the tone produced is hollow and musically unsatisfactory. Overspinning with copper produces a heavier, and yet flexible, string that produces a richer tone. (Johann Christoph Zumpe was probably the first to use overspun strings for bass notes in a keyboard instrument; usually, the lowest 11 consecutive notes of Zumpe’s square pianos have overspun strings.)\(^{106}\)

By the end of the eighteenth century, the technique of overspinning had been known for some time. Overspinning

\[\text{consists in first making a plain brass string, then stretching it on a bench machine, and applying a thin copper wire spiralling around the core. The diameter of this cover wire and the number of turns per unit length determine how heavy a given string is, and this may be graduated to match the intended note.}\]\(^{107}\)

- The first two bass-note strings (FF and FF\(^{\#}\)) have one adjacent copper overspinning loop every 3 millimetres (Plates 315 and 316) (the adjacent loops of the wrapping do not touch each other; this form of overspun string is called ‘open-covered’). This string conforms with the type of open-covered string used on late eighteenth-century English square pianos (by the mid-nineteenth century, the copper wire spiralling around the core was commonly closely wound—that is, adjacent loops of the wrapping touched each other).

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• The remaining 24 consecutive open-covered bass-note strings (GG–F♯ inclusive) have one copper loop every 2 millimetres (Plate 316).

**Tenor**

• The next 10 consecutive notes (G–e inclusive) are plain, drawn brass and graded. (For musical instruments, the basic wire was drawn through holes of diminishing size in factory draw plates. Late eighteenth-century piano strings were made from the purest sort of iron, hammer-tempered when it came out of the furnace.)

**Treble**

• The remaining notes (e–f³ inclusive) are drawn iron (‘steel’, as they used to call it, but considerably less hard than anything used for the purpose from the mid-nineteenth century onwards) and graded.

• Most of the iron strings are original.

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**Plate 314 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?):** the first 28 consecutive bass-note strings (FF–F♯ inclusive) are overspun.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

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108 Ibid., p. 287.
109 Ibid., pp. 53, 287.
Plate 315 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the first two open-covered bass-note strings (FF and FF’) have one copper overspinning loop every 3 millimetres (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 316 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): the open-covered strings for GG–F’ (inclusive) have one copper overspinning loop every 2 millimetres (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Speaking String Lengths

- The speaking string length is measured from the longest of the unison strings—that is, the one on the left—from bridge-pin to nut-pin.

- FF: 1294 millimetres (this is marginally longer than on a square piano made by Beck in 1782, for which the speaking string length of FF is 1285 millimetres).\(^{110}\)

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\(^{110}\) An instrument owned by the Museum für Kunst und Gewerbe, Hamburg. See Beurmann, *Das Buch vom Klavier*, p. 57.
String-Gauge Marks

• String-gauge markings are handwritten, in ink, on the soundboard, very near the wrest-pins (Plate 317). It is not known if Beck wrote these string-gauge markings. It seems likely, as an earlier square piano by Beck (dated 1782)\(^{111}\) similarly has note names and string-gauge numbers handwritten, in ink, on the soundboard, very near the wrest-pins.\(^{112}\)

• Unlike Beck’s 1782 instrument, Worgan’s 1780/86? piano has dotted lines encompassing the wrest-pins; these lines identify groups of wrest-pins as being associated with specific string gauges:
  
a) ‘8’ is written next to the eight wrest-pins for the top four notes (d\(^3\)–f\(^3\) inclusive)

b) ‘9’ is written next to the 36 wrest-pins for the next 18 notes (g\(^a1\)–c\(^a3\) inclusive)

c) ‘10’ is written next to the 16 wrest-pins for the next eight notes (c\(^1\)–g\(^1\) inclusive) (Plate 318)

d) ‘11’ is written next to the 16 wrest-pins for the next eight notes (e–b inclusive).

e) ‘12’ is written next to the eight wrest-pins for the next four notes (c–d\(^#\)) inclusive)

f) ‘13’ is written next to the eight wrest-pins for the next four notes (G\(^#\)–b inclusive) (Plate 319).

• The next 30 wrest-pins for the remaining 15 notes (FF–G inclusive) have no gauge markings. This is because the strings for these notes are overspun.

• The note G has been incorrectly strung with plain drawn brass.

• If Beck’s 1782 piano provides an indication of his usual string-gauge intentions, Worgan’s 1780/86? piano currently and erroneously includes only 28 overspun strings for the bottom 14 notes (FF–G\(^#\) inclusive).

\(^{111}\) An instrument owned by the Museum für Kunst und Gewerbe, Hamburg.

\(^{112}\) See Beurmann, Das Buch vom Klavier, Plate 110e ‘Draufsicht’; and Plate 110g ‘Die Ton-Namen bei den Wirbeln’, p. 55.
Plate 317 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): string-gauge markings—handwritten (in ink) on the soundboard, very near the wrest-pins (detail).

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Plate 318 Square piano by Frederick Beck (fl. ca 1756 – ca 1798) (London, 1780/86?): string-gauge markings—handwritten (in ink) on the soundboard—numbers ‘8’, ‘9’ and ‘10’.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Source: Stewart Symonds Collection, Sydney. Photo by the author.

Listing Cloth
• Missing.

History of Restoration
• At the time of purchase by William Bradshaw, the piano was in a deteriorated condition. This is surprising, given that the family who owned the instrument openly recognised its historical significance.
• In 1987 Stewart Symonds undertook the following restorations:

  Strings
  – Strings that had been wrongly replaced in the past were replaced (the note G has, however, been incorrectly strung with plain drawn brass).
  – Rust was removed from the remaining strings.

  Damper Lever Push-Up Rods
  – The original wooden damper lever push-up rods were replaced with brass rods.
  – The circular leather head component on the top of each rod was replaced.
Keys
- Missing ivory front plates were replaced.
- Score lines were inscribed to match the originals.

Action Frame
- The (then missing) woven cloth strip on the front and back touch rails was renewed.
- Punchings were installed around each balance rail pin.