The Metropolitan Museum of Art

The Crosby Brown Collection of Musical Instruments of All Nations

Catalogue of Keyboard Instruments

PREPARED UNDER THE DIRECTION AND ISSUED WITH THE AUTHORIZATION OF THE DONOR

GALLERIES 25, 26, 27, 28, 29

CENTRAL CASES

New York
The Metropolitan Museum of Art
1903

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TO THE

Rev. F. W. Galpin

AND TO THE MEMORY OF

Mr. A. J. Hipkins

THE FAITHFUL FRIENDS WHOSE UNFAILING

KINDNESS AND WISE COUNSEL HAVE

BEEN THE ENCOURAGEMENT

AND INSPIRATION OF MY MUSICAL WORK, THIS

KEYBOARD CATALOGUE

IS

AFFECTIONATELY AND GRATEFULLY

DEDICATED BY

M. E. B.

PREFATORY NOTE

The keyboard instruments described in this book form part of the Crosby Brown collection of Musical Instruments of All Nations, and are described in Handbook No. 13, to which the reader is referred for information concerning the history of the collection, and the principles of its classification and arrangement. The present book is in part a reprint, in part a supplement. While the descriptions have been taken over without change from the larger work, many of the illustrations are new. The latter include photographs, often in more than one view, of all the keyboard instruments now contained in the Crosby Brown collection; of these, Nos. 2718, 2768, 2804, 2805, 2812, 2849, 2858, 2883, 2908, 2910, 2929, 2945, 2965 have been added since the issue of the earlier catalogue. In addition to the description of these instruments, which is here printed for the first time, supplementary notes have been added to the former descriptions where it seemed important further to emphasize some point in connection with the development of the art. For the Introduction,[1] generously furnished by Mr. A. J. Hipkins, whose services to the history of the keyboard all lovers of music gratefully recognize, the collector desires to express her heartfelt thanks. It is hoped that in its present form the Handbook may serve as a useful guide to the study of the collection.

Of the four chief divisions into which it is customary to divide musical instruments, only three are represented in our group: the strings, the wind, and that in which the tone is produced by the vibration of a sonorous substance. To membranous instruments like the drum, the principle of the keyboard has not yet been applied.

The representatives of the remaining three classes are placed as follows: The strings are in the large cases in Galleries 27, 28, and 29, the former containing those instruments, like the Spinet, the Virginal, and the Harpsichord, in which the tone is obtained by plucking; the latter, those, like the Clavichord and the Piano, in which the tone is obtained by striking. The wind instruments, organs, harmoniums, etc., are contained in Gallery 26, and the sonorous instruments in Gallery 25. Part of the Central Case in the latter Gallery has been arranged as a type case to illustrate the development of the two leading classes of string keyboard instruments, the plucked and the

[1] Reprinted in Handbook No. 13, page xxiii.

hammer-struck, from their prototypes, the psaltery and the dulcimer. Two examples of keyboard instruments played with a bow are placed in Gallery 28.

Models designed to illustrate the leading types of action employed in the keyboard have been placed in the cases, and may be found with the instruments they are designed to illustrate. Owing to their small size it has not been possible to secure effective photographs, and it has therefore been deemed best not to attempt to reproduce them in the catalogue. For the benefit of the student who desires further information, a list of drawings, with the descriptions illustrating the action of the two chief types of keyboard stringed instruments, has been added in an appendix.

In the present catalogue the instruments are arranged in the following five groups:

I. Keyboard Stringed Instruments—Plucked. Spinets, Virginals, Harpsichords.

II. Keyboard Stringed Instruments—Struck. Clavichords, Pianos.

III. Keyboard Stringed Instruments—Bowed. Claviola.

IV. Keyboard Wind Instruments—Organs, Harmoniums, etc.

V. Keyboard Instruments with Sonorous Substances—Glassichords, Glockenspiel, etc.

VI. Musical Accessories—Models of Action.

Within each group the order of age has been followed as far as possible.

M. E. B.

INTRODUCTION

By A. J. Hipkins, F.S.A.

There are no musical instruments that during the past four hundred years have been more generally distributed where Western music has been known than those with keyboards, whether their sound is produced from strings, or with what is understood by wind. The reason for this favor is the comparative ease with which the sounds are elicited, without the player having to make the note, and the facilities the keyboard gives for including, as far as hands and fingers will permit, the different voices or parts, and the figuration of a harmonized musical composition, itself an outcome of these facilities. The violin and wind quartets require as many performers as there are parts to present a like combination. The nearest approach to a keyboard stringed instrument was the Lute, as perfected toward the end of the sixteenth century, but the difficulty of performance was beyond the ability of most who attempted it, and there had to be, even with the most skilled, many unavoidable lacunæ. The spinet-player, or clavicembalist, had incited the lutenist to a competition in which the lute was bound ultimately to fail, but not without leaving a memory of the technique of the lute in features retained in what is known as accompaniment.

The essential foundation of any stringed instrument is in the strings; of a wind instrument, in the reeds and pipes, set in vibration by the breath or other compression of air; but the characteristic of all, whether wind or stringed, made to sound by key levers (as unlocking the sounds), is the keyboard. It arrests the eye at once, and even in an embryonic form, in the Hurdy Gurdy, it attracts and suggests its use. By whom it was invented is not remembered. The earliest keyboard known to us is that of the Hydraulic or Water Organ, invented in the second century B. C., at Alexandria—a Greek invention, and established according to the Greek ideas of music that then prevailed. Water came in to compress the air for the pipes, as bellows were used for the same purpose subsequently. The pneumatic apparatus may indeed have preceded the hydraulic, but the latter, we may suppose more efficiently applied, gained the more prominent place and record. We are here concerned only with the keyboard, and from an

anonymous writer early in the Christian era we know that six octave scales, each resembling in form our descending minor scale, attained a compass of two octaves by combining the Hyper-lydian, Hyper-ionian, Lydian, Phrygian, Hypo-lydian and Hypo-phrygian tropoi, or key-modes. The keys were all level, as shown by a terra-cotta model of such an instrument dug up from the ruins of Carthage, attributed to the first or second century A. D., and preserved in the museum of St. Louis at Carthage, near Tunis, in Africa. There are two keyboards, of eighteen and nineteen keys respectively. As the complete Hydraulikon, according to the anonymous writer, had twenty-one, we may leave out the later introduced Hyper-lydian, and then have eighteen keys, comprising the notes g, a, b flat, b natural, c, d, e flat, e, f, f sharp, g, a flat, a, b flat, b natural, c, d, e, or an octave lower; the pitch, however, being uncertain. The nineteen key-bank included a note we are not sure of. According to Vitruvius the key levers were balanced with horn springs to effect their return when released by the touch. In the Carthage model, to save space, they were probably not balanced but hinged, as in a sixteenth century or early seventeenth century Regal, one of the organographic treasures of the writer. Yet, in later pneumatic organs, balanced keys do not appear, the pipes being controlled by slides like the handstops in a modern organ, perhaps through the paucity of pipes in organs we have record of, that existed in the dark ages. It is almost certain that balanced keys had to be reintroduced, and it would seem that this came about through the Monochord, a pitch-measuring string apparatus, employed as no doubt the very early organs were, as a pitch-carrier or interval measurer. The monochord was a sound-box, very like an Aeolian Harp, at first with one string, whence the name, to be later doubled, trebled, and quadrupled, thus becoming ultimately polychord, with strings of the same measure, as in an Aeolian harp, the notes required being stopped by little bridges placed by hand against the measurement giving the interval sought. The hurdy gurdy was, in principle, such a monochord set in vibration by a wheel, producing a kind of violin tone, but stopped by little wooden plugs analogous to keys. It occurred to some ingenious monk—not Guido d'Arezzo as has been said, but after his time—to adapt, by means of a keyboard, such a stopping contrivance to a finger or plectrum-struck string, and by simple leverage to produce the Clavichord. Virdung, our earliest authority on modern musical instruments, writing in 1511, says expressly it was not then known when the clavichord was invented, or by whom. In his day the full chromatic keyboard was in use, with lower and upper keys, and he gives a diagram of an

earlier diatonic keyboard with two B flats, following Guido's Hexachord System. In point of fact, our chromatic keyboard, but with the upper keys, or sharps, put further back, was in use long before; witness the great Halberstadt organ, built by a priest, Nicholas Faber, in 1361. The original manual compass was evidently preserved when the organ was restored in 1495. The compass was an old Greek one of fourteen level notes, from B in the bass clef to a^1 in the treble, with the chromatic notes at the back, the natural keys very wide, so that a major third was as much as the hand could stretch; and, no fingering being possible, the keys were depressed by the side of the hand or fist. Prætorius, our next informant after Virdung about musical instruments, tells us the church organ of St. Egidius, at Brunswick, dated 1456, permitted the stretch of a fifth. Of another organ of the same period, that of St. Salvator of Vienna, he says the compass was extended to the treble clef c^2, and in the organ at Mildenberg the compass was advanced to the higher f^2 of the treble clef, thus getting away from the boundary of men's voices. By this time the short measure had been introduced, and the bass B pipe sounded a third lower, G. The width of the keys was gradually being lessened, and when Crang, in 1499, built the great organ of St. Blaise at Brunswick, the octave was only the width of nine keys of Prætorius' time, when that interval had come to be grasped, as it has since remained, by an average hand. But Positive and Portative organs had not wide keys; in fact, the latter, in the fourteenth century, from contemporary paintings, appear to have been made to speak, not only by small level keys, but by gimlet-shaped studs something like the keys of a Concertina. The Virginal, or Spinet, which was a Psaltery to which keys were adapted, and which, as well as the clavichord, had been in use in the earliest years of the fifteenth century, even in the oldest specimens (there is one dated 1490) had always narrow keys, as in the modern keyboard. We may therefore safely conclude that the keyboard permitting the grasp of the octave is original, in respect to approximate measurement, in all the smaller keyboard instruments.

Let us review the keyboard province at the opening of the sixteenth century. There were large Church Organs, with three rows of keys and pedals, the use of the latter having originated in the old Harmony, as it is called in Prætorius, of the drone (point d'orgue). The original Mixture was now broken up into registers, controlled by slides, and the beating or striking reed stops were about to be introduced. There were positive organs for chapels and small choirs, and some portative organs still remained in

use for processions. In domestic use there were clavichords, still called monochords, with two or three tangents (strikers), producing their notes from one pair of strings; and virginals or spinets, with jacks (mechanical plectra), oblong and pentagonal, and the long, wing-shaped double and treble spinets, known as Clavicembali, Clavecins or Harpsichords. In England the first independent compositions for these keyboard instruments appeared; a prologue, as Dr. Oscar Bie calls it, in his fascinating "History of Pianoforte Playing," that began with Byrd and Bull, and ended with Orlando Gibbons and the Restoration. At the beginning of the seventeenth century was the dawn of opera and oratorio, and a new order of accompaniment made the keyboard instruments indispensable to the composer, who had already found them his help and strength in contrapuntal problems. At the beginning of the eighteenth century the Paduan harpsichord maker Cristofori had, in Florence, by his mechanical genius, solved the problem of producing tone-gradation by a keyboard, in the new Pianoforte—Gravecembalo col Piano e Forte— of his invention. Attempts had been made to vary the harpsichord by stops, particularly in the Netherlands and England, and, incited by the pianoforte, to lend it a *crescendo* and *diminuendo* by Plenius' Swell, and ultimately by Shudi's Venetian Swell, which has found an effective development in the organ; but all in vain, as by the early years of the nineteenth century the pianoforte had won the victory all round and Beethoven had composed for it.

In this splendid collection, with which Mrs. Crosby Brown has become pre-eminently associated, we may find many noteworthy examples of keyboard instruments and their history. Among interesting specimens of the clavichord is one numbered 2543[1] in the catalogue, attributed to Italy, and dated 1537. Like many old instruments, this one has met with considerable restoration, not entirely to its advantage, but not affecting its interest and value. Italian natural keys were at that time of boxwood, rarely of ivory or other material. A German restorer appears to have substituted black natural keys and white chromatics, as was common in Germany in the eighteenth century. He got entangled in arranging the sequence of the chromatics, possibly from not understanding the fretting by which two or three keys would act upon one pair of strings. All clavichords were "gebunden," or fretted, until the epoch of Bach. But there were frequently single notes at the treble end, and this may have puzzled him. Shifting the last chromatic key but one degree upward would put the succession right; the

[1] Plate XLV.

groups of chromatics being according to the position of the fourth and fifth within the octave, *2*, *3*, *2*, *3*, *2*, and *2* for the natural compass from B below the bass clef to a¹ in the treble, twenty-one level keys. To the same restoration we may attribute an erroneous relettering of the legend, which should surely run "UT ROSA FLOS FLORVM ITA HOC," etc.—"as the rose is the flower of flowers, so this is the clavichord of clavichords." But it was not an Italian practice to use such legends, and this instrument may after all be Flemish or German. Italian or not, it presents very early features of construction, and is the oldest clavichord I have met with. The earliest mentioned in my "History of the Pianoforte"[1] is dated 1547, and is by Domenico di Pesaro (Dominicus Pesaurensis). There is a beautiful spinet, No. *2527*,[2] in this collection, bearing his name, dated 1561. Another rare spinet, No. *2344*,[3] being oblong, would by many be regarded as a virginal. With Praetorius the pentagonal was the virginal, but in England, from the Tudor time until the Restoration, the name "Virginal" covered all keyboard stringed instruments, and if "Spinet" was used it was as a synonym. After the Restoration, with French fashions, the name "Spinet" came into general use. What makes No. *2344* more particularly noteworthy is that it is by C. (Cristofel) Ruckers, whose instruments, if he made many, are little known, and whose relationship to the great Ruckers family of spinet and harpsichord makers is still undetermined. The Florentine instrument, No. *1230*,[4] is, as was usual with pentagonal or hexagonal spinets in Italy, in a false case from which it can be withdrawn. Having a projecting, not a recessed, keyboard, it must be as old as the middle of the sixteenth century. It is more interesting in another sense: the wrest, or tuning-pins, being inserted in a rail in front, over the keyboard. This distinguishes it as a Spinetta Traversa, which is more rare than the Spinetta Tavola, in which the wrest-pins are at the right-hand side, like a clavichord or very old square piano. The spinetta traversa was adopted as the English post-Restoration model, as may be seen in No. *1223*,[5] by Charles Haward, and No. *1212*,[6] by Thomas Hitchcock. Haward was patronized by Pepys, as he has recorded in his diary. The specimen here is dated 1684. The Hitchcocks, Thomas and John, did not date their instruments, but numbered them in one series: the instrument here shown is No. 1518. No. *1225*[7] is an upright spinet or Clavicytherium, probably of Roman origin, as there are three rosaces in the sound-board. It may be compared in its structure with the lovely up-

[1] London: Novello, 1806. [2] Plates IV, V. [3] Plate X. [4] Plates II, III. [5] Plates XV, XVI. [6] Plates XVII, XVIII. [7] Plates XXXIX, XL.

right harpsichord, No. 1224.[1] The beautiful paintings are again a later addition to a cherished instrument, another proof of how much such treasures were valued in those days! To display the paintings, the outer case is designed like a bookcase, not following the lines of the instrument. As I have said elsewhere,[2] "the impression conveyed to the beholder by this unique instrument is one of satisfaction, due to the simple and refined scheme of proportion."

Then there is the no less rare Double Spinet No. 1196,[3] by Ludovicus Grovvelus (mentioned in Huygens' correspondence). It bears the maker's name and the date, 1600. The painting within the lid portrays the duel between David and Goliath, the victory and triumph of the former, who is received with acclamation and music. Prætorius relates that it had been the custom to put the small octave spinets (see No. 1227[4]) upon the larger instruments, like turrets upon a tower; in this specimen the Ottavina, although removable, is included within the case. Only two other such double spinets are known, both decorated with paintings and mottoes; one by Hans Ruckers, the elder, is owned by Mr. Morris Steinert;[5] the other, by Martin Vander Beest, dated 1580, is at Nuremberg.

The appearance of three-bank harpsichords so late in the day, after the search there has been everywhere for old musical instruments, is rather startling. The object of another keyboard is of simple explanation. The instruments that have been discovered are Italian, and as it was not the custom in Italy, as in the Netherlands and elsewhere, to make harpsichords with shifting registers and hand stops, doubling and, as we here see, finally trebling the keyboards was sufficient for the simple changes required. Until the time of Bach and Handel registers were set for harpsichord and organ, as was the case with the orchestras of the time, for the duration of the movement. No. 2359[6] is a magnificent specimen of a highly decorated three-bank harpsichord and stand. The date given, 1779, seems rather late for it, although it has a pianoforte front of that epoch. The instrument itself is probably older. The highest keyboard acts upon the octave string, the middle one upon the octave and one unison, and the lowest upon the two unisons. In No. 2363[7] we have a rare double-harpsichord by one of the inventors, Joannes Couchet, the grandson of the elder Hans, and nephew and pupil

[1] Plates XLI, XLII. [2] "History of the Pianoforte," page 75. [3] Plates XI, XII. [4] Plate XIV. [5] Depicted in "Musical Instruments: Historic, Rare and Unique." Edinburgh, 1888. Plate XX. [6] Plates XXXVI, XXXVII, XXXVIII. [7] Plates XXXIV, XXXV.

of the younger Hans or Jean Ruckers of Antwerp. It was Couchet who, about 1640, changed the double keyboard harpsichord from a mere transposing instrument, contrived to accommodate the Authentic and Plagal Church modes with the singers' capabilities, to a Forte and Piano harpsichord, with three strings (reducible to two and one) upon the lower keyboard, and one string always for the upper. All the then existing harpsichords were altered to suit this new system. An exception occurs in one I have met with, which probably owes its unaltered condition to its long preservation in Italy. I can recall only one other Jan Couchet harpsichord, which is in Edinburgh. In No. 2363 the stops or slides projecting from the side of the case, as in the old positive organs, control the registration.

Other finely decorated harpsichords in this rich collection show how reverently, at one time, the keyboard instruments were cared for. No. 1218,[1] by Louis Bellot, and one from Naples, No. 1231,[2] with its lovely paintings of musical angels and the sleeping beauty within the lid, will arrest attention. Nos. 1220[3] and 1221[4] are by one maker, Jerome de Zentis, of Viterbo, and are also painted and otherwise adorned. No. 1220 is inscribed "Hieronymus Zenti Fecit Romæ, A. S. MDCLXVI.," and also "Joannes Ferrini Florentinus Restauravit, MDCCLV." Now Ferrini was a pupil of Cristofori, and the master left to him the completion of the pianofortes he had in hand at the time of his death in 1731. Ferrini had in the previous year made the pianoforte for the Queen of Spain, chronicled by Burney as having been in the possession of the great singer, Farinelli, and named by him "Raffaello d'Urbino"!

Bartolommeo di Francesco Cristofori, was, as already said, the inventor of the Pianoforte, and Mrs. Crosby Brown has had the good fortune to acquire in Florence the earlier of the two pianofortes known to have been made by him. This treasure, No. 1219,[5] is her most important benefaction to this great collection. Cristofori's invention was published in 1711, and this pianoforte, dated 1720, represents it in its perfected form. The action has the "escapement," without which there can be no vibrating note; the "check," an all-important step toward repeating notes; the shake, etc. Cristofori's action was exactly copied by Silbermann, as well as the structure of the instrument, in the three pianofortes he supplied to Frederick the Great, which are still preserved at Potsdam. The biographical notice of

[1] Plates XXXII, XXXIII. [2] Plates XXV, XXVI, XXVII. [3] Plates XXIII, XXIV. [4] Plates XXI, XXII. [5] Plates L, LI.

Cristofori in Grove's "Dictionary of Music and Musicians" gives all the known antecedent particulars of this historical Piano e Forte and its inventor and maker.

That there should be in this collection a Claviola, No. 2404,[1] is of interest. This sostinente keyboard instrument was devised by the inventor of the modern upright pianoforte, John Isaac Hawkins, of Bordentown, New Jersey. He was an Englishman by birth and an engineer by profession. He introduced the claviola to the public at Philadelphia in 1802. In his upright pianoforte of 1800 he anticipated many features of construction that have since been generally adopted, one being the complete iron frame.

The catalogue numbers 1923-8, 3107-16 and 2401 [2] are attached to an instructive selection of models of actions, showing the mechanical agencies employed in various keyboard instruments to convey the impact of the touch to the strings to cause their vibration. The simplest is for the clavichord. The depression of a key raises a slender brass upright, a "tangent," on the further side of the balance, to serve as a striker, and at the same time as the further bridge of the strings affected. When the key returns and the tangent quits the strings, the cloth interwoven at the back damps them—that is to say, stops their vibration. The next, in order of simplicity, is the spinet and harpsichord "jack," which causes a small plectrum of quill, sometimes leather, to nick the string in passing, the little cloth damper coming into use when it returns. For three hundred years, until its use ended, the jack remained without alteration. The more complex problem of the hammer in the pianoforte has, from Cristofori to the present time, exercised many minds, and will continue to do so as the Pianoforte players contrive increased technical difficulties to be overcome by the touch.

September 9, 1901.

[1] Plate XCI. [2] See Appendix I, page 200.

I

Keyboard Stringed Instruments, Plucked

Spinets, Virginals, Harpsichords, Etc.

Corresponding to Class I, Division II, Section A
of Handbook No. 13

No. 1002

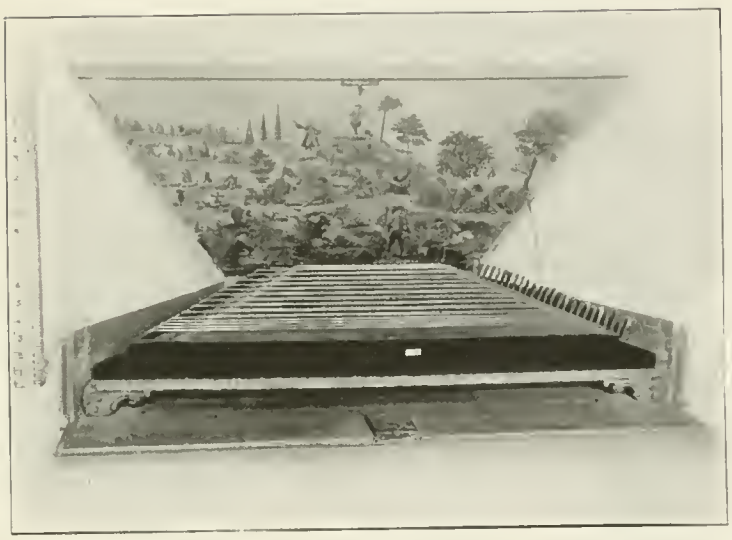
Gallery 25—Central Case

PSALTERY. Trapeze-shaped case with gilt beading, strung with 90 wire strings, arranged in 24 sets of 4, passing over brass bridges at either side of the instrument and plucked with the fingers or small plectra of bone or metal. The sound-board pierced with 2 open holes. The tuning-pins arranged on the right-hand side. The case in which the instrument is placed is painted with scroll-work, musical instruments and figures on a buff ground; the interior of the cover having an interesting painting of players on all kinds of musical instruments. Tyrol. 18th Century. In the instrument is the following label: "Joannes Antonius Berero, Trent, 1745."

Length, 2 feet 8 inches. Width, 1 foot 3 inches. Depth, 5½ inches.

The Psaltery is placed at the head of this section as being the predecessor of the keyboards with *plucked* strings.

PLATE I



No. 1002

No. 1230

Gallery 27—Central Case

SPINET, or VIRGINAL. Compass, four octaves and one note, C to D; lowest octave short. Quadrangular (the left side shorter than the right), supported on a four-legged stand and enclosed in an outer case decorated with stamped leather in blue and gold; the interior of the cover ornamented with painted birds and flowers and a sacred subject, below which is the motto "Bona Est Oratio Cum Jejunio et Eleemosina." The instrument, which is removable from its outer case, has the projecting keyboard characteristic of the early spinets. The sound-board has a sunken rose. Keys, stained wood naturals with black sharps. Leather plectra. Maker unknown. Italy. c. 1550.

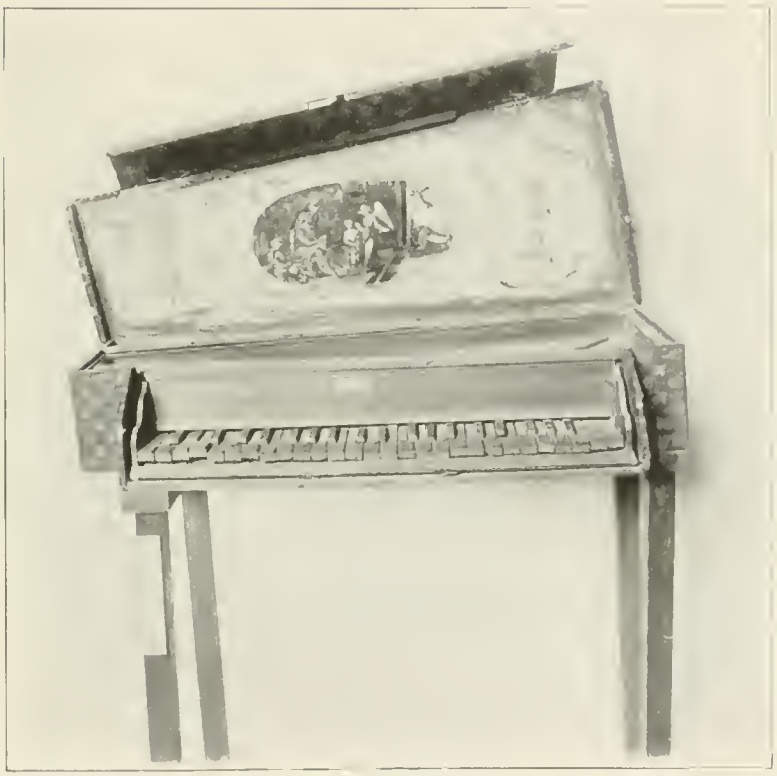
Length, 2 feet 9 inches. Width, 1 foot 6 inches. Depth, 6½ inches.

This instrument is of particular interest, inasmuch as the wrest-pins being placed directly over the keyboard distinguish it as a Spinetta Traversa, which is more rare than the Spinetta Tavola, in which the wrest-pins are placed at the right-hand side, as in the Clavichord.

In the 16th Century all forms of this class of instruments were in Italy designated as "Spinetta," in England as "Virginal," although Prætorius refers to the pentagonal form as the virginal. When the Spinetta Traversa was adopted as the English post-Restoration model in the 17th Century (see Nos. 1212, Plates XVII, XVIII, and 1223, Plates XV, XVI), and came into popular use in England, the name "Virginal" was more particularly applied to the oblong or rectangular form, the Spinetta Tavola.

For description of the Action of the Spinet or Virginal, with illustrations, see Appendix I, pages 290, 291.

PLATE II



No. 1230

No. 1230

Gallery 27—Central Case

SPINET, or VIRGINAL, same as Plate II. Second view with frontboard removed, showing action. The position of the wrest-pins, directly above the keyboard, distinguishes the instrument as a *Spinetta Traversa.*

PLATE III

No. 1230

No. 2527

Gallery 25—Central Case

SPINET. Compass, four octaves, C to C; lowest octave short. Outer case pentagonal resting on a three-legged stand and decorated with gilt gesso work on a green ground, the interior of the cover ornamented with a painting representing a boating scene. The instrument, which is removable from its outer case, is of cedar wood decorated with ivory studs, and has the projecting keyboard. The sound-board has a single pierced rose. Keys, light wood naturals with black sharps (renewed). Leather plectra. Maker, Domenico di Pesaro (Domenicus Pesaurensis). Italy. 1561.

Length, 4 feet 8 inches. Width, 1 foot 7 inches. Depth, 7½ inches.

PLATE IV

No. 2527

No. 2527

Gallery 25—Central Case

SPINET, same as Plate IV. Second view, showing interior decoration and keyboard.

PLATE V

No. 2527

No. 2765

Gallery 27—Central Case

SPINET, or VIRGINAL. Three octaves and a sixth—C to A. Oblong case supported on a four-legged stand, the exterior red and gold with ornamental scrollwork in color, the interior of the lid bearing a winged lion. The instrument, which is removable from its case, is pentagonal, with a projecting keyboard, and studded with ivory. Soundboard with a single beautifully cut rose. A removable silk screen for protecting the action. The original plectra have been replaced by slips of wood. Inscribed: "Franciscus Bonafinis, 1585," also "After a lapse of 132 years, Repaired by me N. N. the year 1717." Italy, 1585.

Length, 3 feet 3 inches. Width, 2 feet. Depth, 1 foot.

PLATE VI

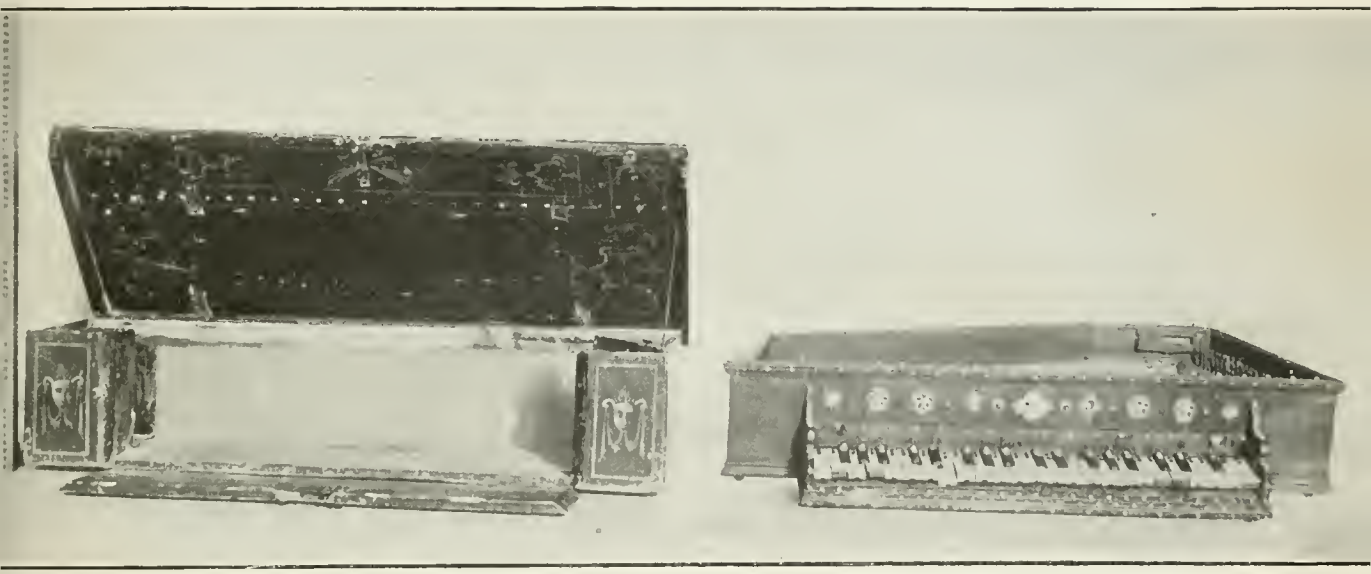
No. 2765

No. 2765

Gallery 27—Central Case

SPINET, or VIRGINAL, same as Plate VI. Second view, showing the instrument removed from its outer case.

PLATE VII



No. 2765

No. 1209

Gallery 27—Central Case

SPINET, or VIRGINAL. Four octaves, C to C; the lowest octave with cut sharps giving F sharp, D, G sharp, E (a later addition). The instrument itself is pentagonal, with a projecting keyboard, and is enclosed in an oblong case, the interior of the cover painted with scroll-work, two coats of arms, and a group of dancing boys. Keys, light wood naturals, with black sharps (renewed). Leather plectra. Maker unknown. Italy. 16th Century.

Length, 5 feet 4 inches. Width, 1 foot 6 inches.

PLATE VIII

No. 1209

No. 1209

Gallery 27—Central Case

SPINET, or VIRGINAL, same as Plate VIII. Second view, showing the instrument removed from its outer case.

PLATE IX

No. 1209

No. 2344

Gallery 27—Central Case

SPINET, or VIRGINAL. Compass, four octaves and a third—C to E. The lowest octave short; upper D sharp omitted. Oblong, supported on a four-legged stand, decorated with characteristic paper of the Flemish School. The sound-board painted with flowers and fruit; the interior of the cover bearing the motto, "ACTA VIRUM PROBANT." Keys, ivory naturals, with black sharps. Quill plectra. Flanders. c. 1600. Cristofel Ruckers (C. R.) on the usual Ruckers' rose.

Length, 3 feet 8 inches. Width, 1 foot 5 inches. Depth, 8 inches.

Instruments made by Cristofel Ruckers are exceedingly rare, only one other specimen at present being known.

PLATE X

No. 2344

No. 1196

Gallery 27—Central Case

DOUBLE SPINET, or VIRGINAL. Compass of the larger, four octaves and a fourth—G to C; lowest octave short. Compass of the smaller, four octaves—C to C. Oblong case, the interior of which is decorated with gilding and painted scroll-work. The inside of the cover has a painting in excellent condition, representing the combat between David and Goliath, and the triumph of David, who is received with music. The large front-board bears the motto, "SCIENCIA NON HABIT INIMICUM NISI IGNORANTEM," while the front-board of the smaller instrument, inserted in the case to the right of the keyboard, bears the motto, "ARS USU IVVANDA." The sound-boards of both instruments are painted with flowers and fruit, each with a rose bearing the initials "L. G.," and representing Pan blowing an organ with his mouth. Keys, ivory naturals with black sharps, the latter finely inlaid. Quill plectra. Flanders, 1600. Maker, Ludovicus Grovvelus. The small movable spinet, or ottavina, which was wanting, is a reconstruction, modeled after the larger instrument by Mr. Arnold Dolmetsch, of London.

Length, 6 feet 3 inches. Width, 1 foot 8 inches.

The Double Spinet is exceedingly rare, there being but two other such instruments known; one, by Hans Ruckers, the elder, is owned by Mr. Morris Steinert, and the other, by Martin Vander Beest, dated 1580, is at Nuremberg.

PLATE XI

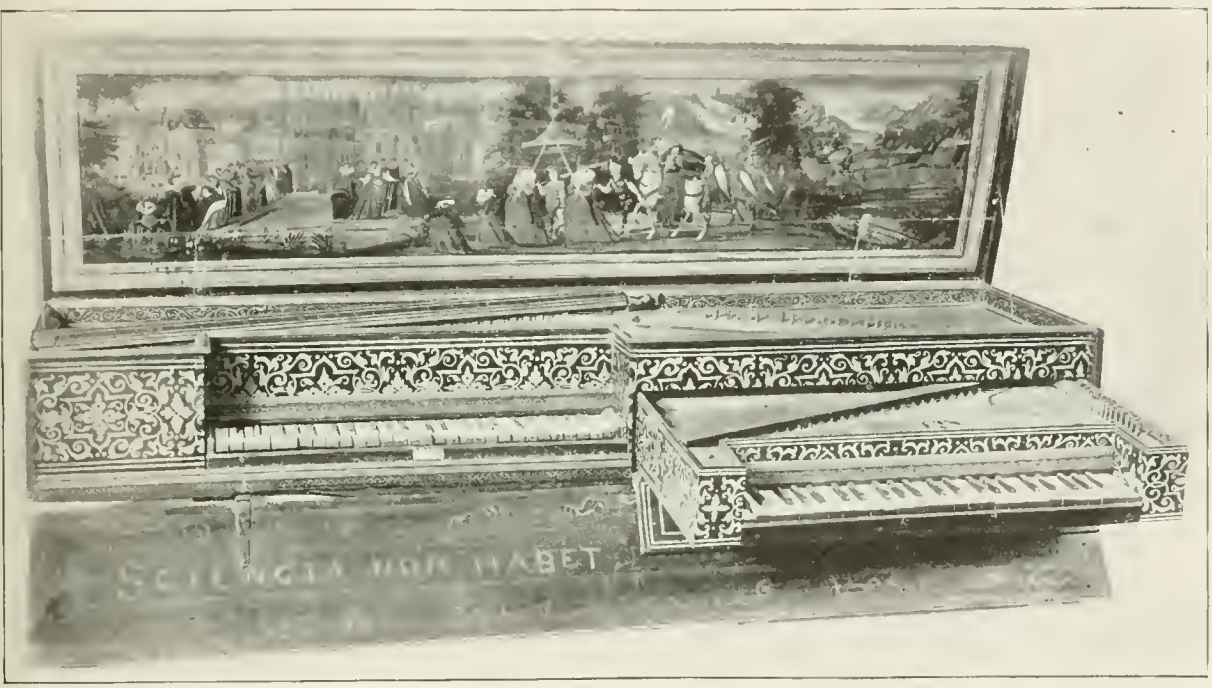
No. 1196

No. 1196

Gallery 27—Central Case

DOUBLE SPINET, or VIRGINAL, same as Plate XI. Second view, showing the movable spinet, or ottavina, partially withdrawn from the case.

PLATE XII



No. 1196

No. 1778

Gallery 27—Central Case

OCTAVE SPINET, or VIRGINAL. Compass, three octaves—F to F, the lowest G sharp and F sharp omitted. An oblong case of black wood, the interior of cover ornamented with painting on paper, representing scenes in the life of Daniel and Tobias. In the centre a female head. Keys, ivory naturals, with black sharps. Quill plectra. Italy. 17th Century. Maker unknown.

Length, 1 foot 6 inches. Width, 9 inches.

PLATE XIII

No. 1778

No. 1227

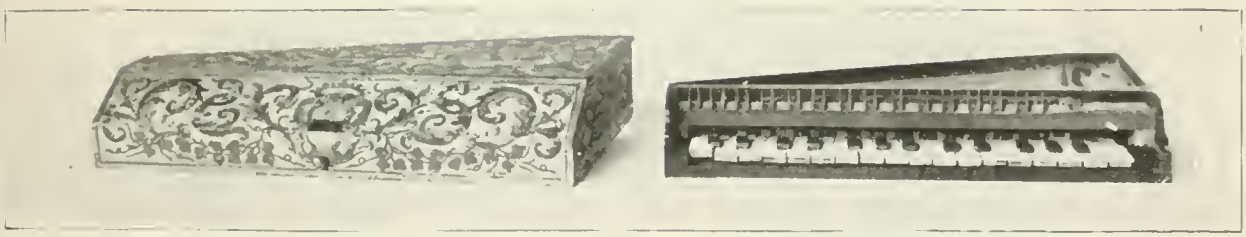
Gallery 27—Central Case

OCTAVE SPINET. Compass, two octaves and a fourth—G to C. The instrument, which is pentagonal, is enclosed in an outer case, decorated with foliated scroll-work and a coat of arms. Keys, ivory naturals, with black sharps. Quill plectra. Instrument removable from the outer case. Italy. 17th Century. Maker unknown.

Length, 1 foot 5½ inches. Width, 9½ inches. Depth, 4 inches.

These small spinets were tuned an octave above the ordinary pitch, and sometimes included in a larger instrument. See No. 1196, Plates XI, XII.

PLATE XIV



No. 1227

No. 1223

Gallery 27—Central Case

SPINET. Compass, four octaves and a fifth—G to D; lowest octave short. Wing-shaped case of polished walnut on a three-legged stand. Sound-board with cut rose. Keys, ebony naturals, with white sharps. Leather plectra. England. 1684. Maker, Charles Haward.

Length, 4 feet 6 inches. Depth, 7 1/2 inches.

Drexel Collection.

PLATE XV

No. 1223

No. 1223

Gallery 27—Central Case

SPINET, same as Plate XV. Second view, with frontboard removed, showing the wrest-pins placed directly above the keyboard, a later form of the Spinetta Traversa adopted by Charles Haward and Thomas Hitchcock as the English post-Restoration model.

PLATE XVI

No. 1223

No. 1212

Gallery 27—Central Case

SPINET. Compass, five octaves—G to G. Wing-shaped case of walnut on a four-legged stand. Sound-board without a rose. Keys, ebony naturals, with ivory fronts; sharps ivory, with ebony inlaid line. Quill plectra. The number of the instrument is 1518. England. c. 1700. Maker, Thomas Hitchcock.

Length, 6 feet 1 inch. Depth, 8 inches.

Drexel Collection.

PLATE XVII

No. 1212

No. 1212

Gallery 27—Central Case

SPINET, same as Plate XVII. Second view, with frontboard removed, showing a similar arrangement of wrest-pins to that of No. 1223, Plate XV.*

PLATE XVIII

No. 1212

No. 1222

Gallery 27—Central Case

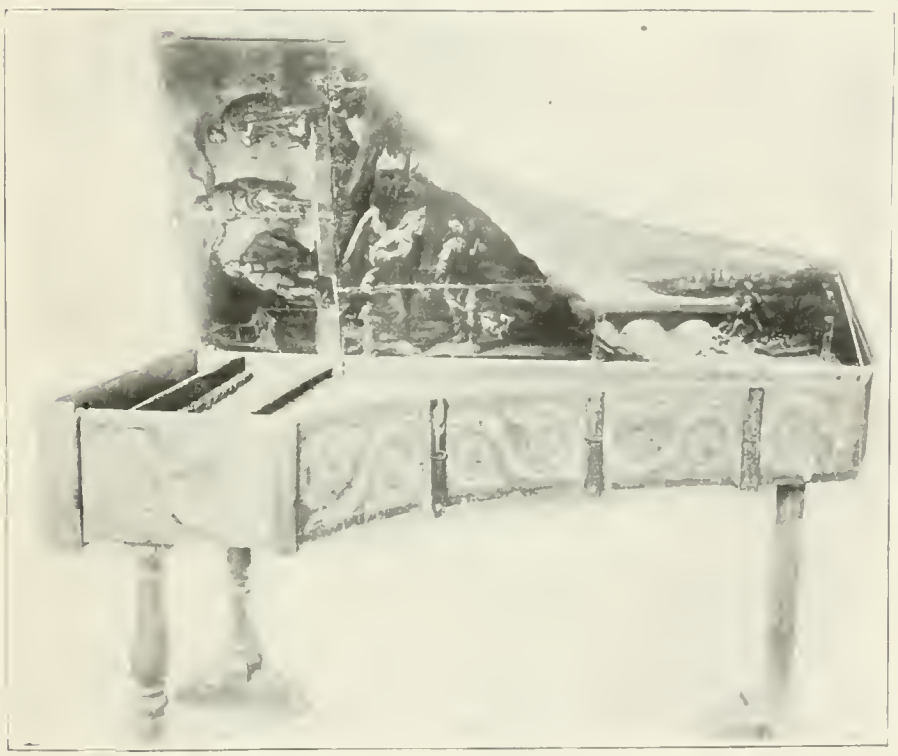
HARPSICHORD. Compass, four octaves—C to C; lowest octave short. Long, trapeze-shaped instrument of cedar wood, enclosed in an outer case decorated with large scroll-work device, the interior of the cover painted with sacred subjects. The sound-board has a cut rose. Keys, light wood naturals, with black sharps (renewed). There are two rows of jacks, acting upon two unison strings, the ends of the sliders passing through the right-hand side of the instrument. Keyboard front decorated with musical subjects. Italy, c. 1600. Maker unknown.

Length, 5 feet 7½ inches. Width, 2 feet 7 inches. Depth, 10 inches.

The Harpsichord is known in Italy as the "*Clavicembalo*," and in France as the "*Claveçin*," while the early English name was "*Clavicembalo*," or "*Harpichordum*."

For description of the action of the Harpsichord, with illustrations, see Appendix I, pages 292, 293.

PLATE XIX



No. 1222

No. 1222

Gallery 27—Central Case

HARPSICHORD, same as Plate XIX. Second view, showing keyboard and interior decoration of case.

PLATE XX

No. 1222

No. 1221

Gallery 27—Central Case

HARPSICHORD. Compass, four octaves and a fourth—C to F; the lowest octave formerly short. A long, trapeze-shaped instrument of cedar wood, decorated with mouldings of the same, resting on a three-legged stand. The exterior painted with Cupids and wreaths of flowers. On each side of the cover is a pastoral scene and a distant landscape. The sound-board has a sunken rose. Keys, ivory naturals, with black sharps (modern). Two rows of jacks, acting on two strings in unison; they were worked formerly by small buttons within the case. Quill plectra. Inscribed: "Hieronymus de Zentis Viterbiensis. F. Romæ. Anno Dom. MDCLVIII." Italy, 1658. Maker, Jerome de Zentis. This instrument has been much restored.

Length, 6 feet 6 inches. Width, 2 feet 8 inches. Depth, 10½ inches.

Purchased by the Metropolitan Museum of Art.

PLATE XXI

No. 1221

No. 1221

Gallery 27—Central Case

HARPSICHORD, same as Plate XXI. Second view, with front-board removed, showing action and interior decoration of case.

PLATE XXII

No. 1221

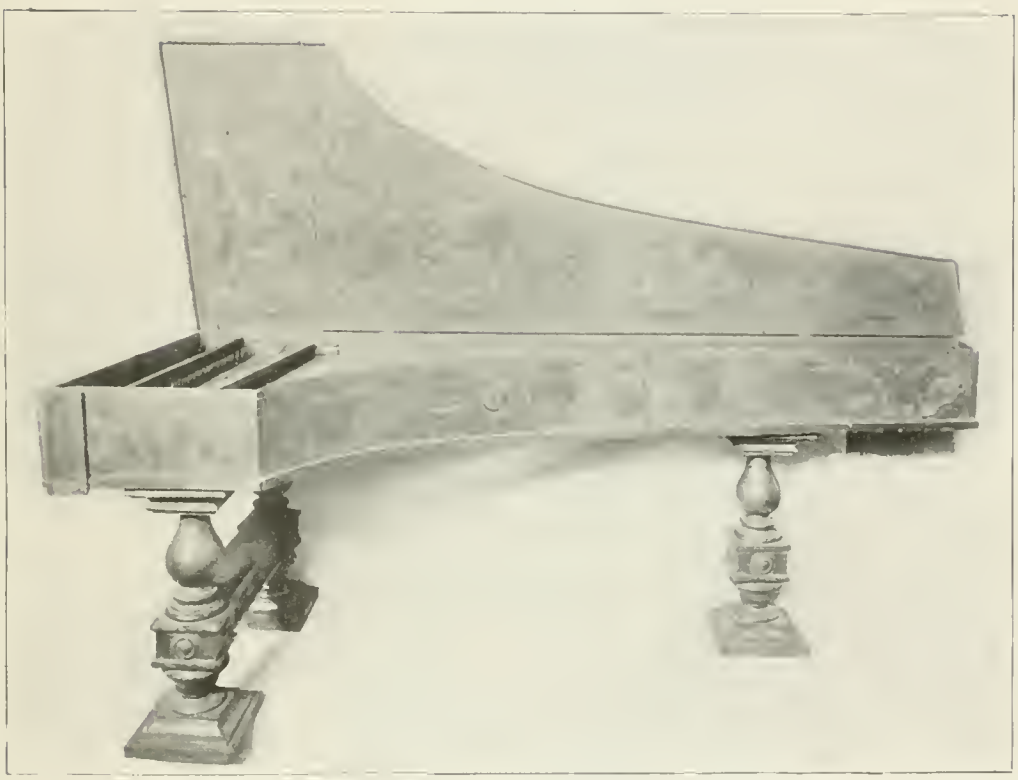
No. 1220

Gallery 25—Central Case.

HARPSICHORD. Compass, four octaves and a sixth—A to F. A long, trapeze-shaped instrument of cedar wood, enclosed in an outer case, resting on three solid legs, elaborately turned and gilded. The sides of the case painted with conventional ornaments and a coat of arms; the exterior of the cover ornamented with scroll-work, the interior with representations of birds, flowers and Cupids with musical instruments on a gilt ground. The sound-board has a single rose. Keys, boxwood naturals, with black sharps. There are two rows of jacks, acting on two unison strings, their ends projecting through the right-hand side of the case. Leather plectra. Inscription: "Hieronymus Zenti Fecit Romæ A. S. MDCLXVI." And "Joannes Ferrini Florentinus Restauravit MDCCLV." Italy. 1666. Maker, Jerome de Zentis.

Length, 7 feet 9½ inches. Width, 3 feet.

PLATE XXIII



No. 1220

No. 1220

Gallery 25—Central Case

HARPSICHORD, same as Plate XXIII. Second view, showing keyboard and interior decoration of case.

PLATE XXIV

No. 1220

No. 1231

Gallery 27—Central Case

HARPSICHORD. Four octaves and a fourth—A to E. A long, trapeze-shaped instrument on a three-legged stand. Keyboard front inlaid with ebony and ivory, and with small ivory plaques engraved with scenes from the Passion of our Lord. The jack-rail similarly inlaid. At the end of the keyboard are gilt mythological figures on dragons. The inside of the cover painted with musical scenes and sleeping Venus. The sound-board bears three sunken roses. Keys, ebony naturals with ivory fronts, black sharps with ivory inlay. Two rows of jacks, acting on two unison strings and moved within the case by small buttons at the ends of the sliders. Also a row of buff dampers. Quill plectra. Italy. 17th Century. Maker unknown.

Length, 6 feet 6 inches. Width, 2 feet $10\frac{1}{4}$ inches.

PLATE XXV

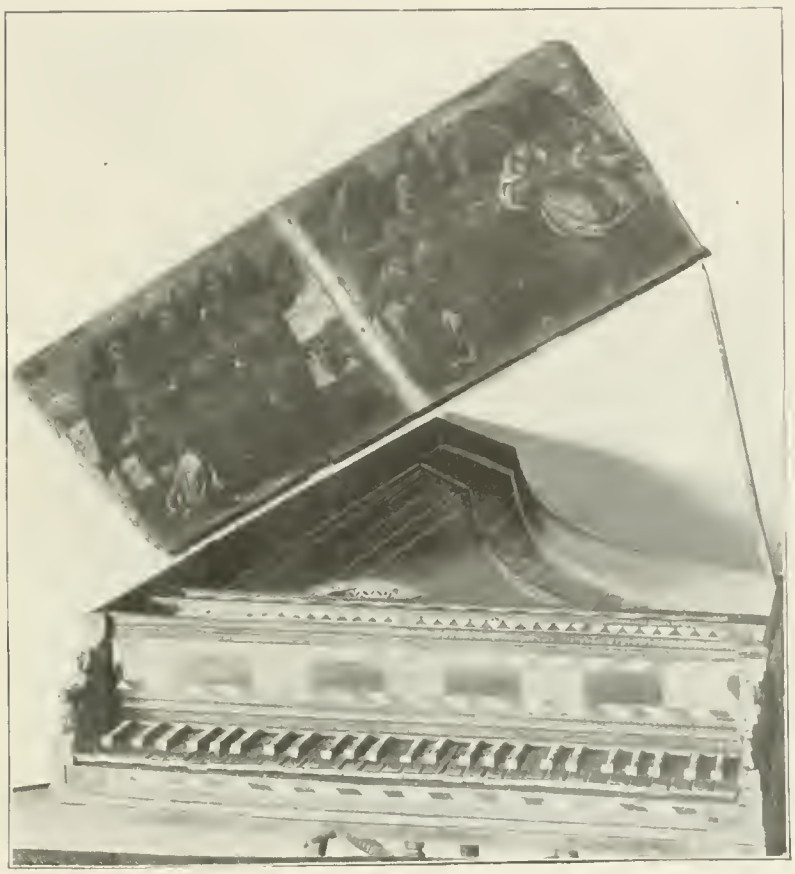
No. 1231

No. 1231

Gallery 27—Central Case

HARPSICHORD, same as Plate XXV. Second view, showing keyboard and inlaid frontboard.

PLATE XXVI



No. 1231

No. 1231

Gallery 27—Central Case

HARPSICHORD, same as Plate XXV. Third view, with front-board removed, showing action.

PLATE XXVII

No. 1231

No. 1226

Gallery 27—Central Case

HARPSICHORD. A small trapeze-shaped instrument of cedar wood. The outer case painted gray and decorated with floral designs, rests on eight bowed legs. The soundboard has a sunken rose. The keys, boxwood naturals inlaid with black lines, the sharps dark wood studded with ivory. Two rows of jacks acting on two strings in unison; quill plectra. The frontboard inlaid with a coat of arms, the name of the maker and the date, as follows: "Jo. Paulus Leoni Civ. R.H. F. An. D. MDCCLXXIII. Italy."

Length, 5 feet 8 inches. Width, 2 feet. Height, 3 feet 1 inch.

PLATE XXVIII

No. 1226

No. 1078

Gallery 27—Central Case

HARPSICHORD. Compass, five octaves—F to F; lowest F sharp omitted. A long, trapeze-shaped instrument in polished walnut, with inlay of white wood and large brass mountings. Keys, ivory naturals, with black sharps. Three rows of jacks, acting on two unison and one octave set of strings, also a row of buff dampers. The sliders moved by long levers. The stop-knobs project immediately above the keyboard, two on each side. The vibrating length of the longest unison wire is 5 feet 4 inches, and of the shortest 5 inches. The vibrating length of the octave wires is half of the above lengths. Quill plectra. On the left-hand side a lever, worked by a foot pedal, moves two sliders. This action, which was in general use in the late 18th Century English harpsichords, is called the "Machine." England. 1781. Makers, Jacobus & Abraham Kirkman.

Length, 7 feet 3 inches. Width, 3 feet. Depth, 1 foot.

PLATE XXIX

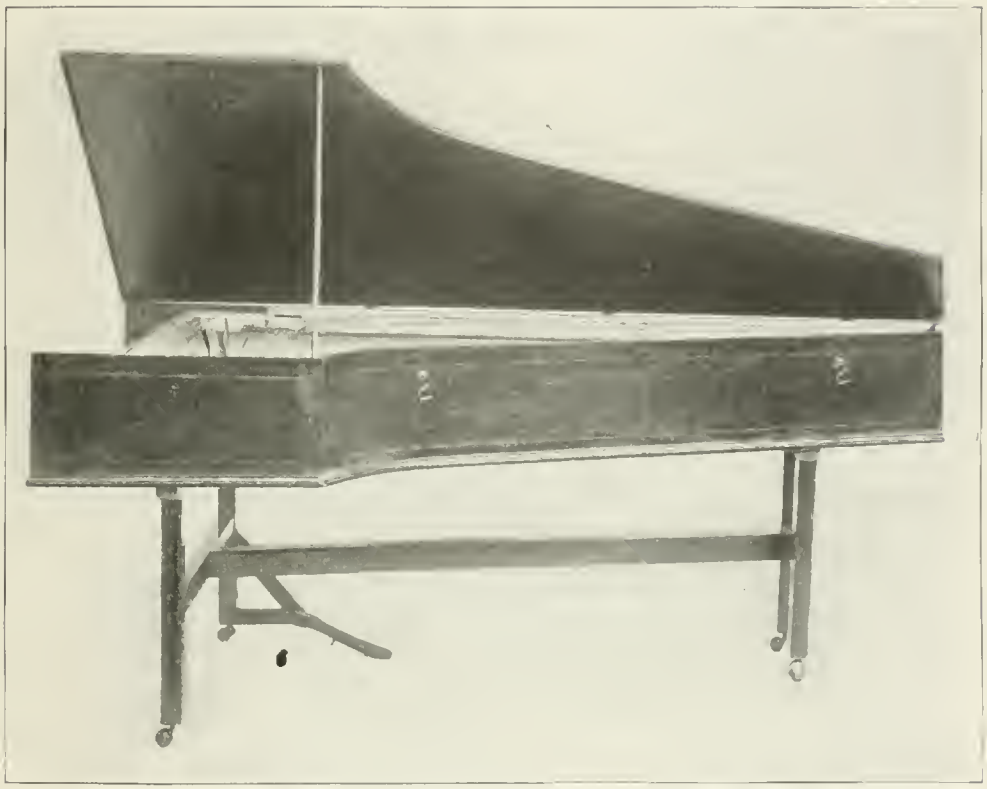
No. 1678

No. 1678

Gallery 27—Central Case

HARPSICHORD, same as Plate XXIX. Side view.

PLATE XXX



No. 1678

No. 2929

Gallery 29—Central Case

HARPSICHORD. Compass, five octaves, F to F; lowest F sharp missing. A long trapeze-shaped instrument, the case profusely decorated with gesso ornament illustrating Neptune in his chariot surrounded by attendants. A platform resting on ten claw feet supports an elaborate group of allegorical figures composed of sea nymphs and satyrs, two of the latter carrying the instrument upon their up-stretched arms. At one end of this group two dolphins bear a shell in which is seated the figure of a child, while the opposite or keyboard end, is finished with a large sculptured group consisting of two figures resting upon a rock, a satyr playing upon a bagpipe, a sea nymph at his side. The entire surface in gilt. The soundboard has a sunken rose. The keys, ivory naturals with black sharps. Italy. 18th Century (?). Maker unknown.

Length, 8 feet 9 inches. Width, 2 feet 9 inches.

No. 2929

No. 1218

Gallery 27—Central Case

HARPSICHORD. Double-banked. Compass of each of the two keyboards four octaves and a sixth—G to E. A long, trapeze-shaped case, resting on seven bowed legs, decorated with gesso work. The outside of the case decorated with characteristic Vernis-Martin paintings of musical subjects and flowers on a gilt ground. The interior of the cover painted with floral decorations on a similar ground. The lid is supported by a gilt rod, representing a sheaf of arrows. The sound-board, which has a small rose with the name of the maker, is decorated with paintings of flowers and birds. Keys, ebony naturals, with ivory sharps. Three rows of jacks, acting on two unison and one octave set of strings. The upper keyboard acts on one string only, the lower keyboard on all three, if required. The sliders moved by short levers inside the case. Quill plectra. France, 18th Century. Maker, Louis Bellot.

Length, 8 feet 2 inches. Width, 3 feet 2 inches.

PLATE XXXII

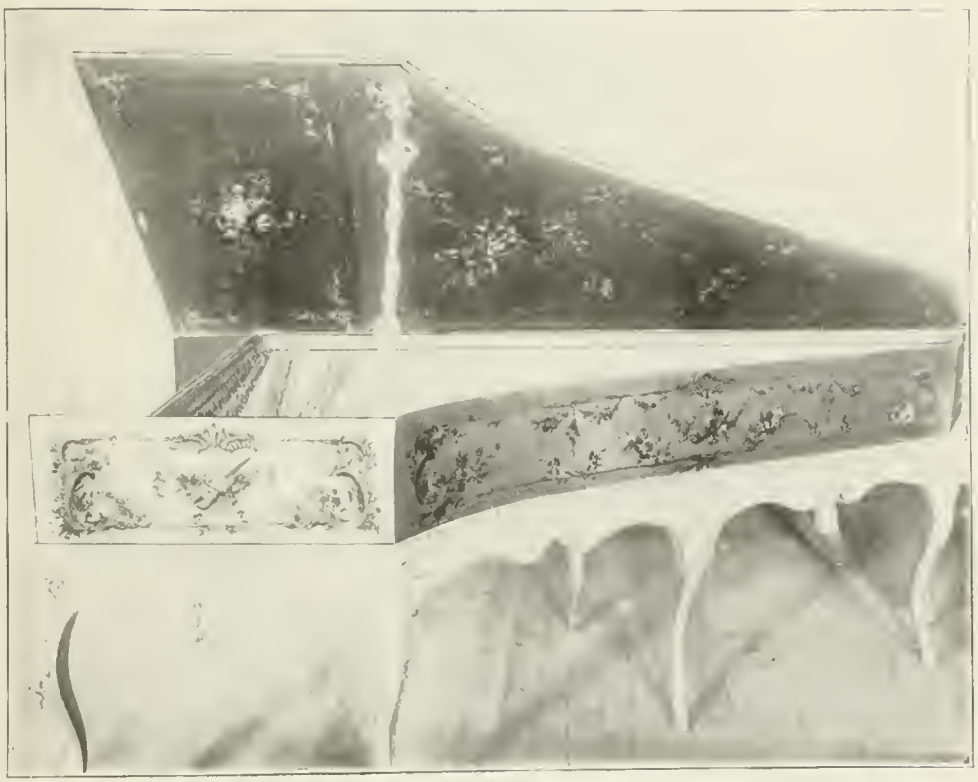
No. 1218

No. 1218

Gallery 27—Central Case

HARPSICHORD, double banked, same as Plate XXXII. Side view showing case decorations.

PLATE XXXIII



No. 1218

No. 2363

Gallery 25—Central Case

HARPSICHORD. Double-banked. Compass of both keyboards, four octaves and a fifth—F to C. A long trapeze-shaped case supported on a wooden stand with seven legs, finely decorated with carving and gilt gesso work. The outside of the case painted with flowers and conventional ornament on a gilt ground. The interior of the case ornamented with black scroll tracery on a gilt ground. The sound-board, with a single rose, is somewhat similar to that adopted by Ruckers. The keys, naturals of rounded ivory, with gilded fronts: sharps black. Four rows of jacks, acting on three strings, two unison, one octave, the fourth row acting on the first string. A lute stop. The jack of this stop, by plucking the string close to the bridge, gives the reedy tone, which was much employed by performers on the lute. The vibrating length of the longest unison wire is 5 feet 6¾ inches. The vibrating length of the shortest unison wire 6¼ inches. The octave wires are half the above length. The upper keyboard acts on the first string and with the lute stop; the lower keyboard on the first, second, and third strings without the lute stop. The sliders are worked by small brass knobs, which project through the right-hand side of the case. Quill plectra. Flanders. c. 1650. Maker, Joannes Couchet.

Length, 7 feet 6 inches. Width, 2 feet 10 inches. Depth, 10½ inches.

Jean Couchet was a nephew of Jean Ruckers. See Hipkins' "History of the Pianoforte," pp. 82-84.

PLATE XXXIV

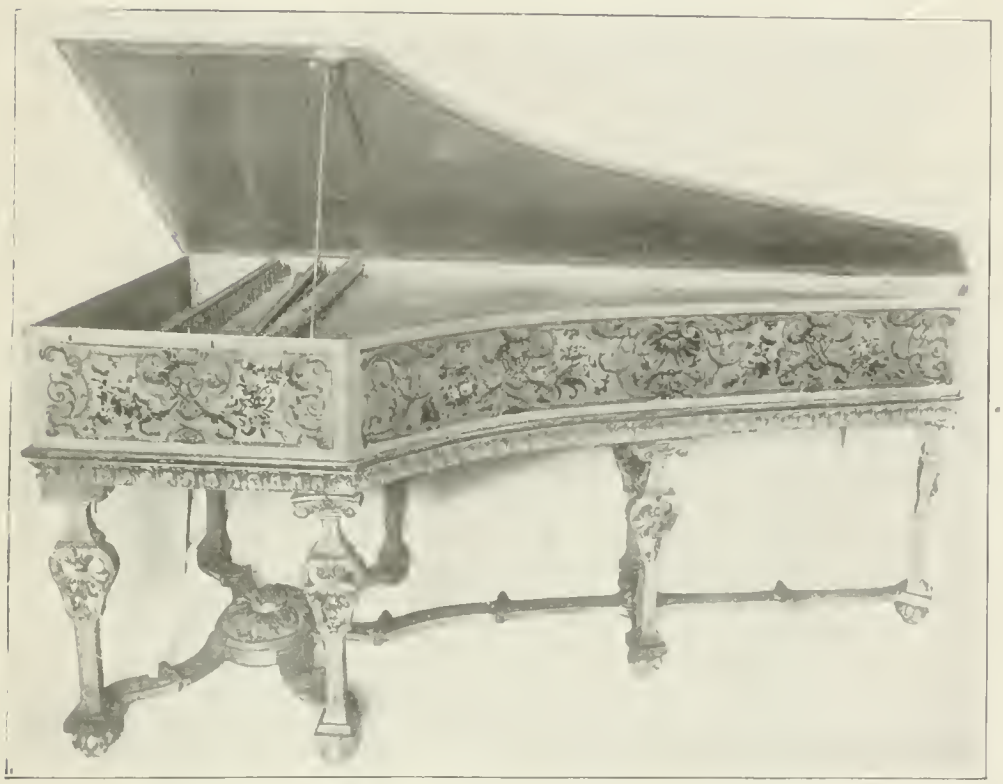
No. 2363

No. 2363

Gallery 25—Central Case

HARPSICHORD, double banked, same as Plate XXXIV. Side view, showing case decoration and ornamental stand.

PLATE XXXV



No. 2363

No. 2359

Gallery 25—Central Case

HARPSICHORD. Triple-banked. Compass of each keyboard five octaves—F to F. A trapeze-shaped case, wholly gilt, supported on a five-legged stand, decorated with elaborate carvings and pierced scroll-work in Louis XV style. The exterior of the case painted with conventional ornaments and medallions representing Cupids and flowers. The outside of the cover bears a coat of arms, three crescents (or), grouped on a shield (azure), the arms of the Strozzi family. The interior has a medallion representing a love scene. The upper front-board has the following inscription engraved on an ivory plaque: "Vincentius Sodi Florentinus Fecit—Anno Domini 1779," with two coats of arms of the Strozzi family and that of the city of Florence. Keys, ivory naturals with ivory fronts; sharps, dark brown wood with two ivory lines. Each keyboard projects slightly over the one below, there being no front-boards between them. The sound-board has no rose. Three rows of jacks, with three sets of strings (two unison and one octave). The vibrating length of the longest unison string is 5 feet 2½ inches; that of the shortest 6½ inches. The octave strings are half this length. The upper keyboard acts on the octave strings; the middle keyboard on one unison and the octave; the lower keyboard on the two unison strings. No stops or means of shifting the sliders. Leather plectra. Italy. 1779. Maker, Vincentius Sodi.

Length, 7 feet. Width, 3 feet 5 inches. Depth, 9¾ inches.

This specimen of a triple-banked harpsichord was apparently made to obviate the use of stops, and is probably unique.

Professor Frederico Vellani, Secretary of the Museo del Liceo Musicale, Bologna, says: "The instrument, on account of its age and to avoid farther damage from the destructive work of time, was subjected to some indispensable but slight repairs; and these repairs were all executed according to the best rules of art."

Mr. Alexander Kraus, of Florence, writes as follows: "The Harpsichord is a magnificent piece of workmanship and well adapted to a Museum. I have no hesitation in declaring it the work of Vincentius Sodi, for I compared it with one by the same maker which is now in my possession and forms a part of my Collection. It is restored and reduced to its present form so that it can be played."

PLATE XXXVI

No. 2359

No. 2359

Gallery 25—Central Case

HARPSICHORD, triple banked, same as Plate XXXVI. Second view, showing interior decoration.

PLATE XXXVII

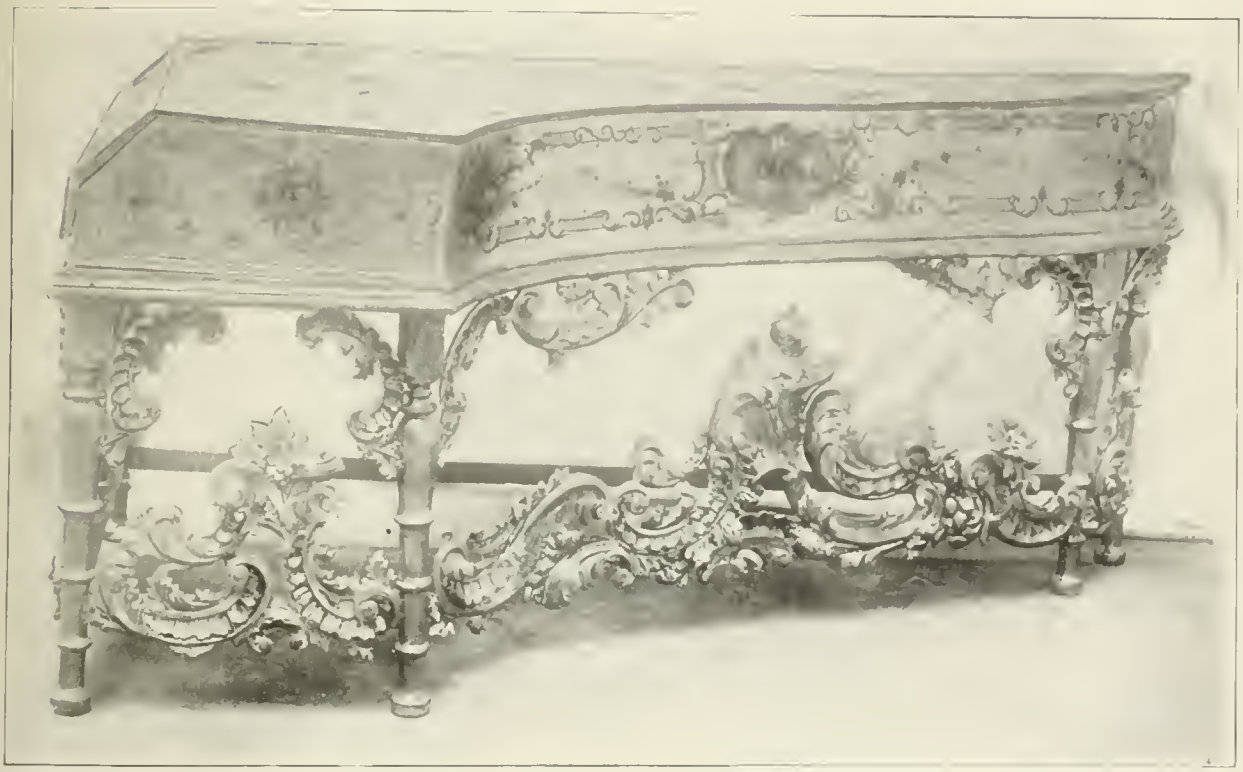
No. 2359

No. 2359

Gallery 25—Central Case

HARPSICHORD, triple banked, same as Plate XXXVI. Third view, showing case decorations and carved stand.

PLATE XXXVIII



No. 2359

No. 1225

Gallery 27—Central Case

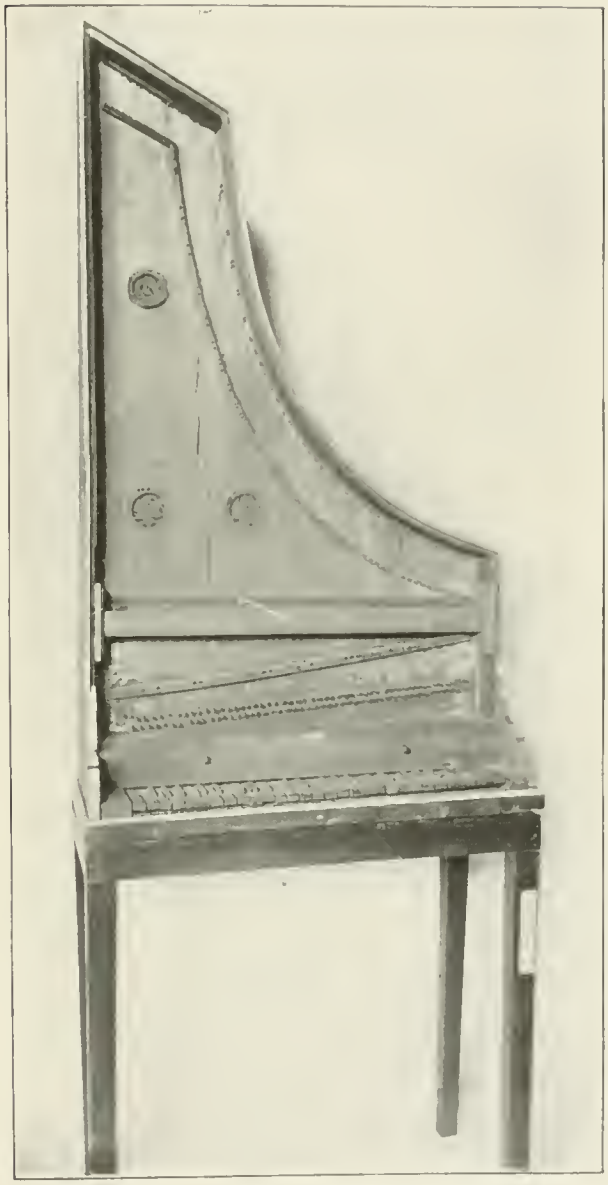
CLAVICYTHERIUM or CLAVICEMBALO VERTICALE. Upright harpsichord. Compass, four octaves and a fourth—C to F; lowest octave short. A vertical, trapeze-shaped body, supported on a square stand. Sound-board decorated with three roses. Keys, boxwood naturals, with black sharps, two strings to each note. Leather plectra. Italy, c. 1600. Maker unknown.

Height, 4 feet 11 inches. Width, 2 feet 10 inches.

Similar instruments are described by Prætorius and Mersenne.

For description of the action of the Clavicytherium or Clavicembalo Verticale, with illustration, see Appendix I, pages 292, 293.

PLATE XXXIX



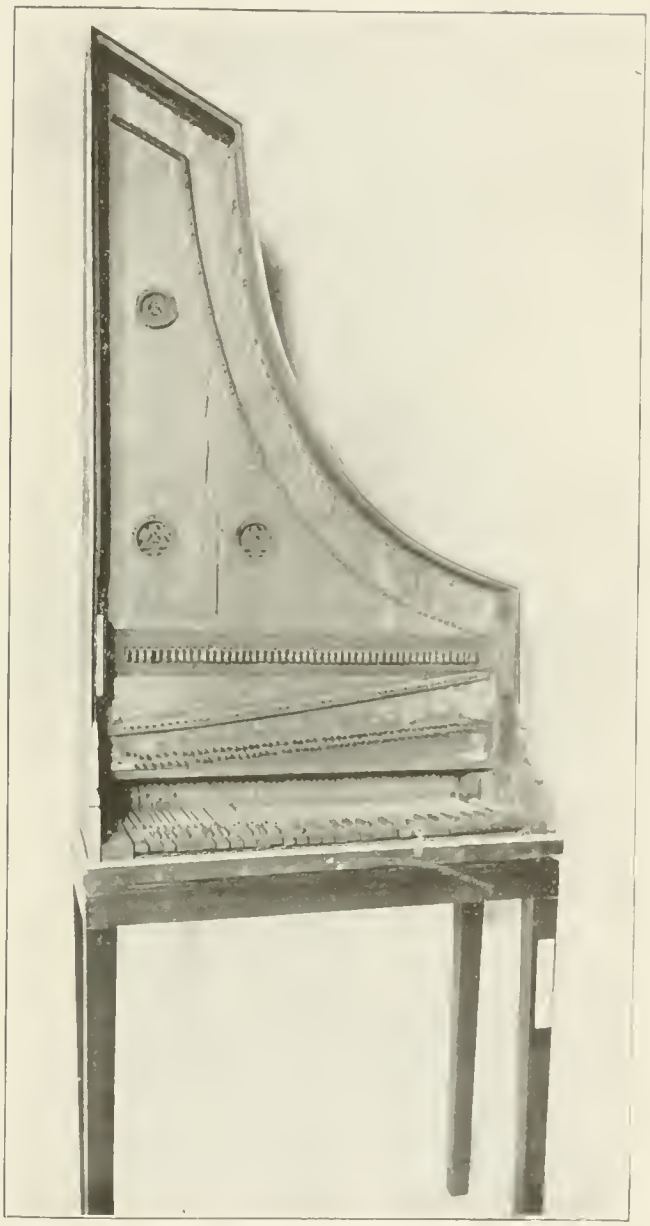
No. 1225

No. 1225

Gallery 27—Central Case

CLAVICYTHERIUM, or CLAVICEMBALO VERTICALE, same as Plate XXXIX. Second view, with frontboard removed, showing action.

PLATE XL



No. 1225

No. 1224

Gallery 27—Central Case

CLAVICYTHERIUM or CLAVICEMBALO VERTICALE. Upright harpsichord. Compass, four octaves—C to C; lowest octave short. An oblong case, supported on a four-legged stand, the folding doors and keyboard painted with sacred and musical subjects, the cover bearing a coat of arms. The sound-board, decorated with a single rose, assumes the usual trapeze shape, the remaining space being decorated with a painting of David playing on the harp. Keys, ebony naturals, with black sharps, inlaid with an ivory line. Leather plectra. Two unison strings plucked by two rows of jacks, the sliders immovable. The corners of the cover have crumbled away from age. Italy. Early 17th Century. Maker unknown.

Height, 7 feet 5 inches. Width, 2 feet 4 inches.

A similar instrument exists in the Snoeck Collection at Ghent, under the title "*Claveçin Buffet.*"

PLATE XLI

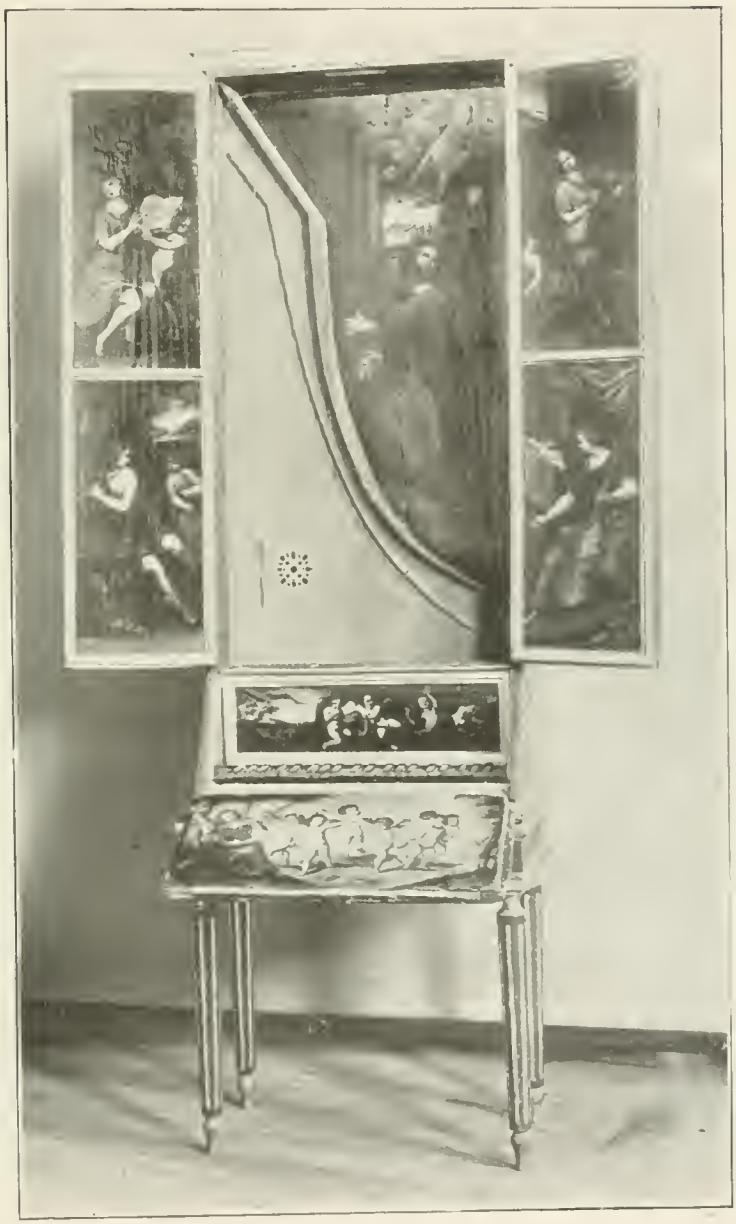
No. 1224

No. 1224

Gallery 27—Central Case

CLAVICYTHERIUM, or CLAVICEMBALO VERTICALE, same as Plate XLI. Second view, showing interior decoration of case.

PLATE XLII



No. 1224

No. 2430

Gallery 26—Central Case

CLAVIHARP. Compass, seven octaves—A to A. Harp-shaped case in bird's-eye maple, with gilt carving, standing on two cross-legs, with gilt scroll-work. The sound-board with a gilt decoration and a painting representing a female figure surrounded by Cupids. Keys, ivory naturals, with black sharps. Strings of wire; two lower octaves overspun. Two pedals, one lifting the dampers from the strings in the two lower octaves, the other opening a swell shutter similar to that in the harp. Italy. Late 19th Century. Maker unknown.

Height, 5 feet 8 inches. Width, 4 feet 4 inches. Depth, 1 foot 6 inches.

The Claviharp was invented by Christian Dietz, of Paris, in 1815. By an ingenious mechanism the string is plucked when the key is depressed, giving a harp-like effect to the instrument. The striking is done by finger-like hooks, which pluck the strings in passing, and which are immediately brought back in their original position by little leaden weights. The instrument has also a self-acting muffling apparatus, which can be shut off by a pedal register, and two other pedal registers, one controlling a list or strip of cloth, the other pressing upon the deepest chords of a paper roll, thus together producing a rattling sound (bassoon register). The present specimen has received modern improvement, the plectra of two lower octaves having been replaced by hammers similar to those on the piano.

PLATE XLIII

No. 2430

II

Keyboard Stringed Instruments, Struck. Clavichords, Pianos, etc.

Corresponding to Class I, Division II, Section B of Handbook No. 13

No. 1440

Gallery 25—Central Case

DULCIMER. 22 double strings, giving a diatonic scale of three octaves—F to F. A black oblong case, standing on 4 legs, ornamented with decorative beading. Sound-board bearing a central bridge and having 2 pierced sound-holes. U. S. A. Early 19th Century. Maker unknown.

Length, 3 feet 5 inches. Width, 18 inches. Depth, 6½ inches.

The Dulcimer is placed at the head of this section as being the predecessor of the keyboards with *struck* strings.

PLATE XLIV

No. 1440

No. 2543

Gallery 28—Central Case

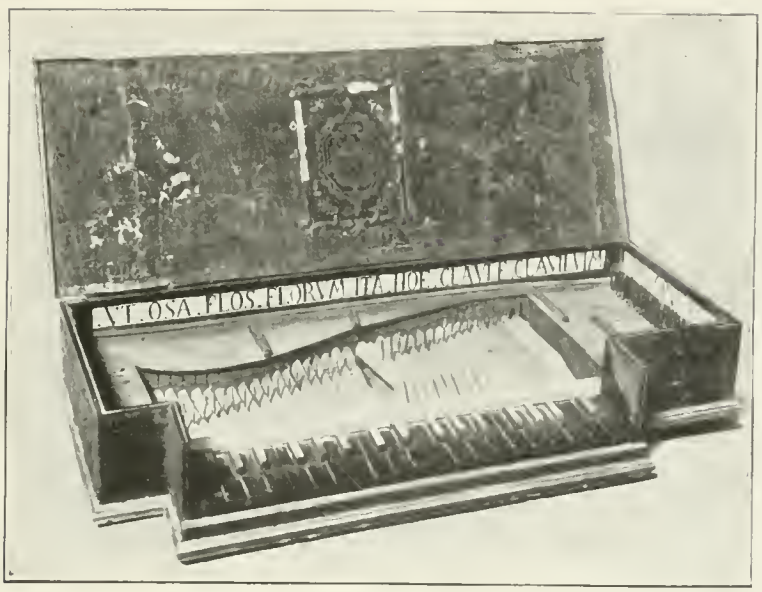
CLAVICHORD. Compass, 36 notes. Oblong case, covered with stamped leather, with conventional designs in brown on a gold ground; gilt mouldings around the edges. The inner cover bears a coat of arms on stamped leather. The keyboard projects. Keys, ebony naturals, with ivory sharps. Italy. 1537. Maker, Alex. Trasontinus.

Length, 2 feet 5 inches. Width, 1 foot 1¾ inches. Depth, 5¼ inches.

At present, this instrument has one string to each tangent, small movable bridges being placed under the strings somewhat after the manner of the early Italian clavichords. Examination of the instrument shows that it has been much altered from its original construction. The keys, which apparently have been renewed, are arranged in a peculiar way, extra sharps being inserted between B natural and C in the lowest octave, and between E and F in the upper octave, with no provision for an F sharp between F and G immediately above. The following inscription and motto on ivory are found within the edge of the case: "Alex. Trasontini ut osa flos florum ita hoc clavle claviluim hoc opus, 1537." The motto should read as follows: "Ut rosa flos florum ita hoc clavile clavilium."

For description of the action of the Clavichord, with illustration, see Plate XLVIII, page 119; also Appendix I, pages 294, 295.

PLATE XLV



No. 2543

No. 1216

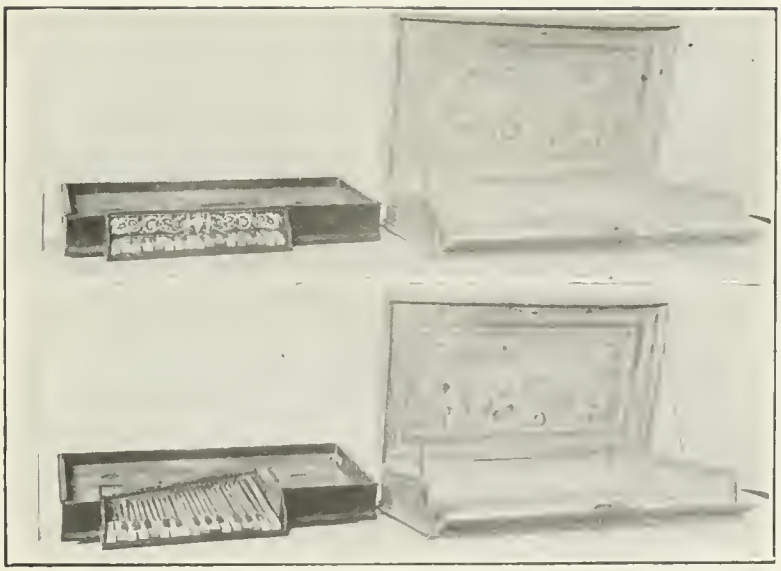
Gallery 25—Central Case

CLAVICHORD. Compass, 28 notes. An oblong outer case of gilded wood decorated with foliage, the inside of the cover decorated with paintings of flowers, enclosing the instrument, which is of black wood. The sound-board has two sunken roses, and the front-board (Fig. 1) which is inlaid with ivory, bears the arms of the Medici family. The projecting keyboard (Fig. 2) has ivory naturals and black sharps. This instrument has one string to each tangent and also an additional sharp between B and C in the highest octave. It is impossible to say whether this was the original arrangement of the keys. Italy. c. 1600. Maker unknown.

Length, 2 feet 8 inches. Width, 1 foot 9 inches. Depth, 5 inches.

The mechanism of the tangent striking the string and so producing a musical note was probably derived from the early monochords with their movable bridges.

PLATE XLVI



No. 1216

No. 1215

Gallery 28—Central Case

CLAVICHORD. Two views: figure 1, frontboard removed; figure 2, frontboard in place. Compass, four octaves; the lowest octave short. Oblong wooden case, covered with colored paper. Keyboard recessed. Keys, light wood naturals, with black sharps (renewed). This instrument is *gebunden*, or *fretted;* that is, 2 tangents and sometimes 3 tangents strike on the same string. 2 strings to each note. The lower 6 notes *bundfrei*, or *unfretted;* that is, with a pair of strings to each tangent. Germany. 17th Century. Maker unknown.

Length, 3 feet 2 inches. Width, 11½ inches. Depth, 3 inches.

PLATE XLVII

1

2

No. 1215

No. 1215

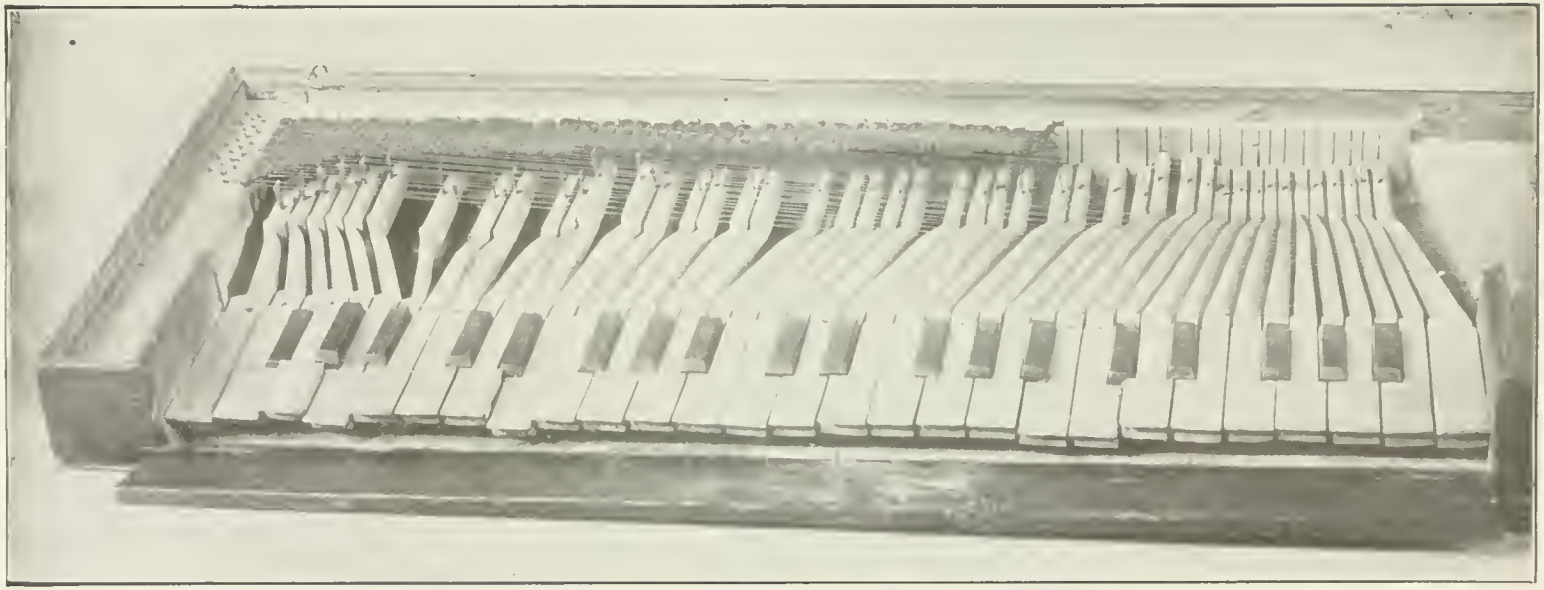
Gallery 28—Central Case

CLAVICHORD, same as Plate XLVII. Enlarged view showing action. In this instrument 45 notes are obtained from 22 pairs of unison strings; the six lower notes e, f, f sharp, g, g sharp, a, *bundfrei* or unfretted,—a pair of strings to each tangent; the remainder, *gebunden* or fretted,—two or three tangents striking the same pair of strings.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
E	F	F♯	G	G♯	A	B♭	c	d	d♯	f	g	a	c^1	d^1	f^1	$g\sharp_1$	$b\sharp^1$	d^2	f^2	$g\sharp_2$	$b\sharp_2$
						B♯	c♯		e	f♯	g♯	b♭	$c\sharp_1$	$d\sharp_1$	$f\sharp_1$	a^1	c^2	$d\sharp_2$	$f\sharp_2$	a^2	c^3
												b♯		e^1	g^1	$b\flat_1$	$c\sharp_2$	e^2	g^2	$b\flat_2$	

For further description of the Clavichord action see Appendix I, Plate CXXX, page 295.

PLATE XLVIII



No. 1215

No. 1207

Gallery 28—Central Case

CLAVICHORD. Compass five octaves—F to F. Oblong case on a carved wooden stand with four bowed legs. The outer case painted in imitation of tortoise-shell; the inside of the cover black, with painted panels. Keyboard recessed. Keys, ebony naturals, with ivory sharps. This instrument is *bundfrei*, or *unfretted*. Germany. 1765. Maker, John Christopher Jesse, Organist at St. Martin's Church, Halberstadt.

Length, 5 feet. Width, 2 feet. Depth, 7½ inches.

For an instrument of this kind Bach wrote his celebrated Preludes and Fugues, demonstrating the practicability and value of equal temperament in tuning.

PLATE XLIX

No. 1207

No. 1219

Gallery 29—Central Case

PIANO. Compass, four octaves and a fourth—C to F. Trapeze-shaped case of cedar, standing on three legs. Outside of case painted black. Keys, light wood naturals, with black sharps. Two ivory knobs on the side blocks, enabling the action to be withdrawn from the instrument. Two strings to each note. The vibrating length of the longest string is 6 feet 2 inches; the shortest 4½ inches. Sound-board without a rose. Italy. 1720. Maker, Bartholomæus de Christophoris. Above the front-board on the block which carries the action are the following inscriptions: "Bartholomæus de Christophoris Patavinus Inventor Facierat Florentiæ, MDCCXX," impressed in Roman characters, and on one side, in running hand, "Restaurato l'Anno 1875, da Cesare Ponsicchi Firenze."

Length, 7 feet 7½ inches. Width, 3 feet 3 inches. Depth, 9½ inches.

This specimen possesses an unusual interest, as being the earlier of the two existing pianos known to have been made by Cristofori, the inventor of the pianoforte. The other, dated 1726, is in the possession of Mons. Alexandre Kraus, of Florence, Italy.

Bartolommeo di Francesco Cristofori was born in Padua in 1653, and died in 1731. The house where he lived is not known. His workshop was in the Officina (offices) of the Count of Tuscany, where he was under the auspices of the Prince of Tuscany. A monument erected after the Cristofori Festa is in the Cloister of Santa Croce, on the right of the entrance coming from the piazza, and at the end of the Loggia. No portrait of Cristofori is known to exist.

From Mr. Hipkins' introductory article on Keyboard Instruments (page 11) we quote the following: "Cristofori's invention was published in 1711, and this pianoforte, dated 1720, represents it in its perfected form. The action has the 'escapement' without which there can be no vibrating note; the 'check,' an all-important step toward repeating notes; the shake, etc. Cristofori's action was exactly copied by Silbermann, as well as the structure of the instrument, in the three pianos he supplied to Frederick the Great, which are still preserved at Potsdam. The biographical notice of Cristofori in Grove's 'Dictionary of Music and Musicians,' gives all the known antecedent particulars of this historical Piano e Forte and its inventor and maker."

For description of the Cristofori action, with illustration, see Appendix I, pages 296, 297. Documents bearing on the history of the instrument are printed in Appendix II, page 305.

PLATE L

No. 1219

No. 1219

Gallery 29—Central Case

PIANO, same as Plate L. Front view, showing keyboard.

PLATE LI

No. 1219

No. 2965

Gallery 29—Central Case

PIANO. Compass, five octaves less one note, G to F. Oblong mahogany case resting on a stand with four square legs. Keys ivory naturals with white sharps. Two stops inside of the case on the left hand side regulate the dampers, one raising the upper half, the other the lower. The instrument is inscribed as follows: "Johannes Zumpe, Londini, Fecit 1767, Princess Street, Hanover Square" and has XVIIII stamped on the back of the nameboard. England, 18th Century.

Length, 4 feet 2 inches. Width, 1 foot 0½ inches.

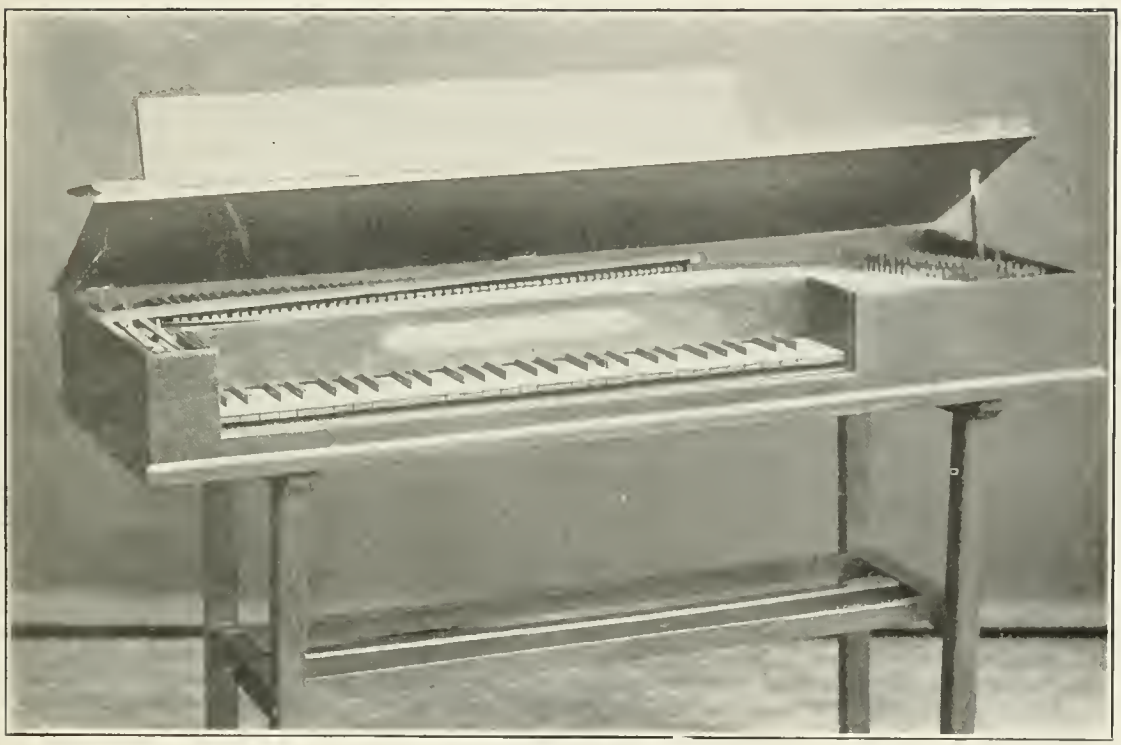
Johannes Zumpe, a German in the employ of Shudi, the harpsichord maker, was the first to construct square pianos. He brought out his invention in London, aided by his friend Rev. William Mason, composer and poet and friend of the poet Gray. Fétis, the great musical historian wrote in 1851 that his first lessons on the piano were on one of Zumpe's make dated 1762, which is the earliest date of which there is any record. The oldest Zumpe piano known is dated 1766 and is owned by Messrs. Broadwood.

In regard to the above instrument Grove says (Dictionary, Vol. II, p. 714): "Allowing Zumpe to have been a year or two in business before he made this number, he would not have started before 1765."

The Germans claim the adaptation of the clavichord case for the piano for Friederici of Gera: they date it 1760. Nothing is known of the action of such instrument.

For description of the Zumpe action, with illustration, see Appendix I, pages 298, 299.

PLATE LII



No. 2965

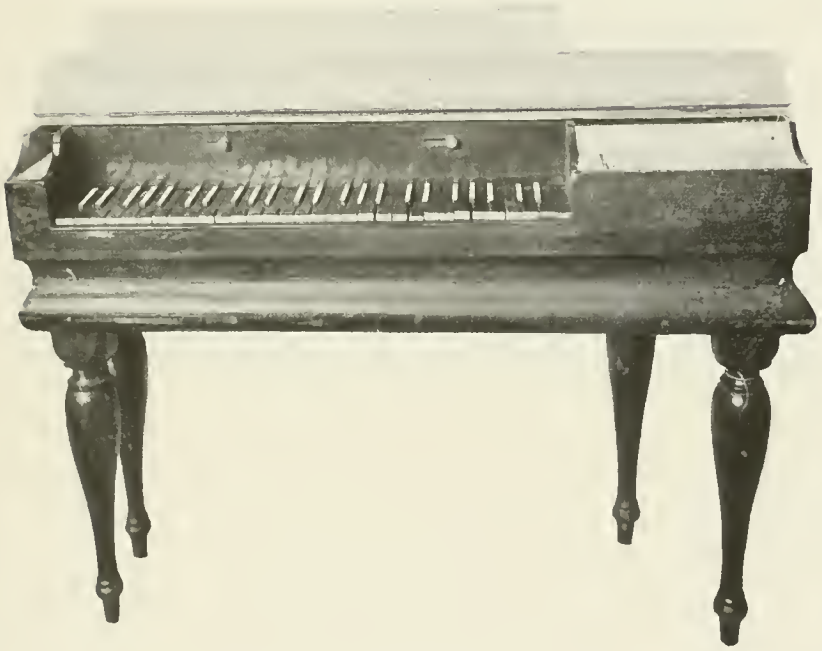
No. 2910

Gallery 28—Central Case

PIANO. Compass, four octaves and a fourth, C to F. Pentagonal case of painted wood resting on four turned legs. Keys, black naturals with white sharps. Small wooden hammers. Two stops over the keyboard regulate the dampers. Germany. 18th Century. Maker unknown.

Length, 3 feet 6½ inches. Width, 1 foot 5 inches. Height, 1 foot 10 inches.

PLATE LIII



No. 2910

No. 2910

Gallery 28—Central Case.

PIANO, same as Plate LIII. Second view, with frontboard removed.

PLATE LIV

No. 2910

No. 1197

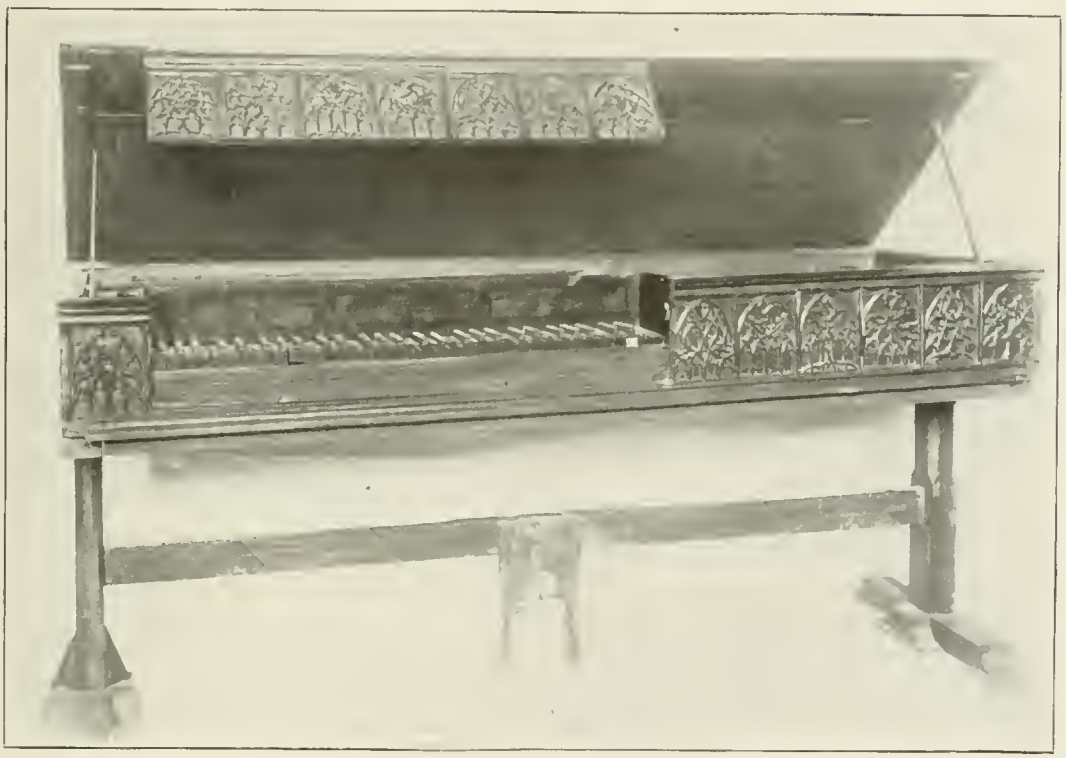
Gallery 29—Central Case

PIANO. Compass, five octaves—F to F. Oblong case, supported upon a stand, with two legs resting on cross-bars. The outside of the case decorated with appliqué open-work in black oak. Keys, ebony naturals, with ivory sharps. Primitive Viennese action, without escapement. Originally furnished with one forte pedal, lifting the dampers. Nuremberg, Germany. 18th Century. Maker unknown.

Length, 5 feet 4 inches. Width, 1 foot 10¾ inches. Depth, 8 inches.

For description, with illustration, of the primitive Viennese action, without escapement, see Appendix I, pages 300, 301.

PLATE LV



No. 1197

No. 1197

Gallery 29—Central Case

PIANO, same as Plate LV. Second view, with frontboard removed, showing action.

PLATE LVI

No. 1197

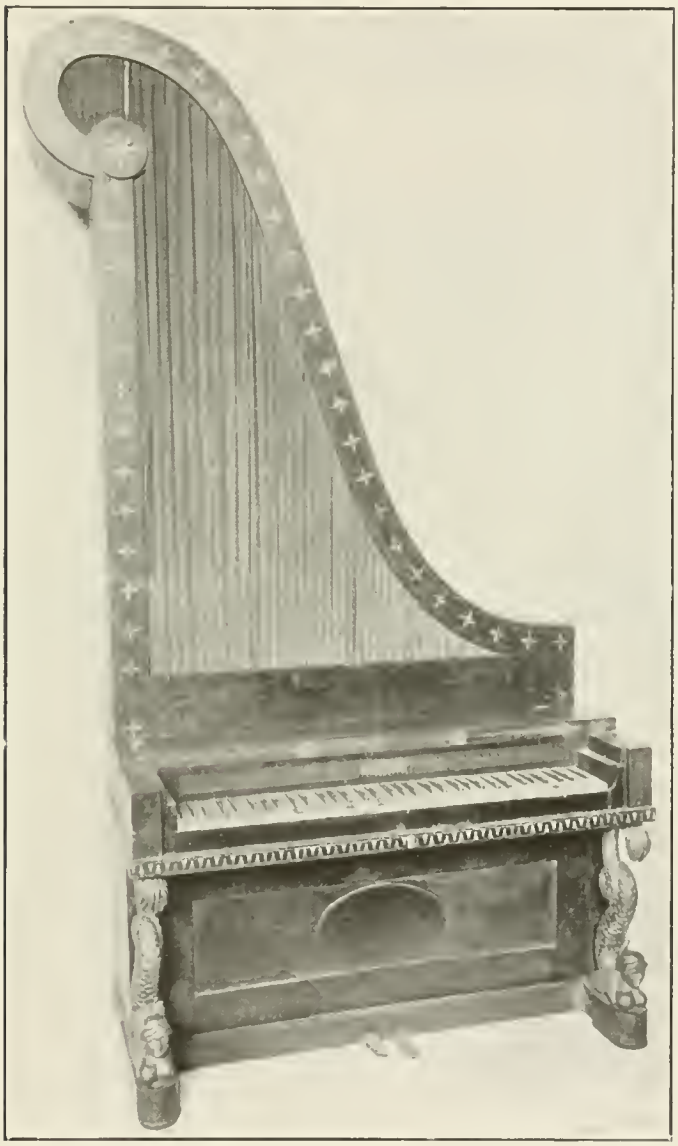
No. 1203

Gallery 28—Central Case

PIANO. Compass, six octaves and one note—F to G. Upright model, the upper part harp-shape, the lower part in the form of a cabinet, the keyboard supported by two mermaid figures in carved wood, gilded. The case of curled mahogany veneer richly inlaid with mother-of-pearl. The works protected by a plaited silk screen. Keys, mother-of-pearl naturals with black sharps inlaid with pearl. The loud and soft pedals are placed in the centre below the keyboard. Twi-cord throughout. Germany. 18th Century. Maker, Carl Lang, Nuremberg.

Height, 7 feet 10½ inches. Length, 4 feet. Depth, 2 feet.

PLATE LVII



No. 1203

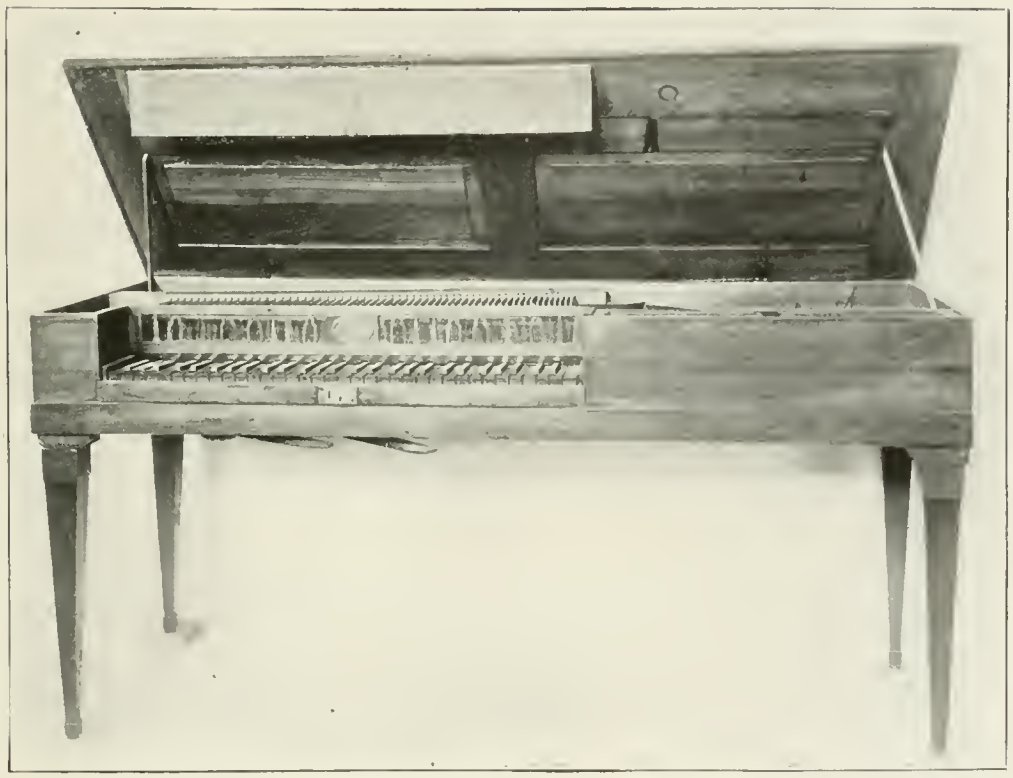
No. 1214

Gallery 28—Central Case

PIANO. Five octaves—F to F. Oblong case of light wood, resting on four legs. Keys, black naturals, with white sharps. Beneath the front of the instrument two genouillères (knee levers), the invention of John Andreas Stein, act respectively as forte and soft pedals, the latter muting the strings with cloth. Austria. Late 18th Century. Maker, Anton Vatter, Vienna.

Length, 5 feet 3 inches. Width, 2 feet 2 inches. Depth 8 inches.

PLATE LVIII



No. 1214

No. 1214

Gallery 28—Central Case

PIANO, same as Plate LVIII. Second view, with frontboard removed, showing action.

PLATE LIX

No. 1214

No. 1213

Gallery 29—Central Case

PIANO. Compass, six octaves—F to F. Oblong mahogany case with rounded corners, resting on two supports with spread feet, brass mounted. The case decorated with inlaid lines. Keys, ivory naturals, with black sharps. Two pedals working in an ornamental lyre below the instrument respectively raise the dampers or mute the strings with soft leather. Wrest-pins in front of instrument. Bi-cord, the last 8 notes single. Austria. Early 19th Century. Maker, André Stein d'Augsbourg à Vienne.

Length, 5 feet 6 inches. Width, 2 feet $7\frac{1}{2}$ inches. Depth, 1 foot 2 inches.

This is apparently the work of Matthäus Andreas Stein, who removed from Augsbourg to Vienna on the death of his father, Johannes Andreas Stein, in 1792. The Stein pianos were used by Mozart and Beethoven.

For description, with illustration, of the Stein action, see Appendix I, pages 300, 301.

PLATE LX

No. 1213

No. 2849

Gallery 28—Central Case

PORTABLE PIANO. Compass, three octaves—F to F. Oblong mahogany case banded with satin wood. Four spindle legs so arranged as to fold under the case. Frontboard inlaid with marqueterie and the name-plate in Battersea enamel. Keys, ivory naturals, with black sharps. The catalogue of the makers, dated 1789, describes these instruments as follows: "Portable Clavecins on two different principles. Their tones are remarkably sweet and delicate, and their structure renders them agreeable for traveling with, as they may be conveyed and even performed upon in a coach." The name-plate bears the following inscription: "Longman and Broderip, Musical Instrument Makers, No. 26 Cheapside, and No. 13 Haymarket, London." (c. 1790.)

Length, 2 feet 6½ inches. Width, 1 foot 4 inches.

Messrs. Longman and Broderip were the predecessors of the firm of Clementi & Collard, Cheapside, London.

PLATE LXI

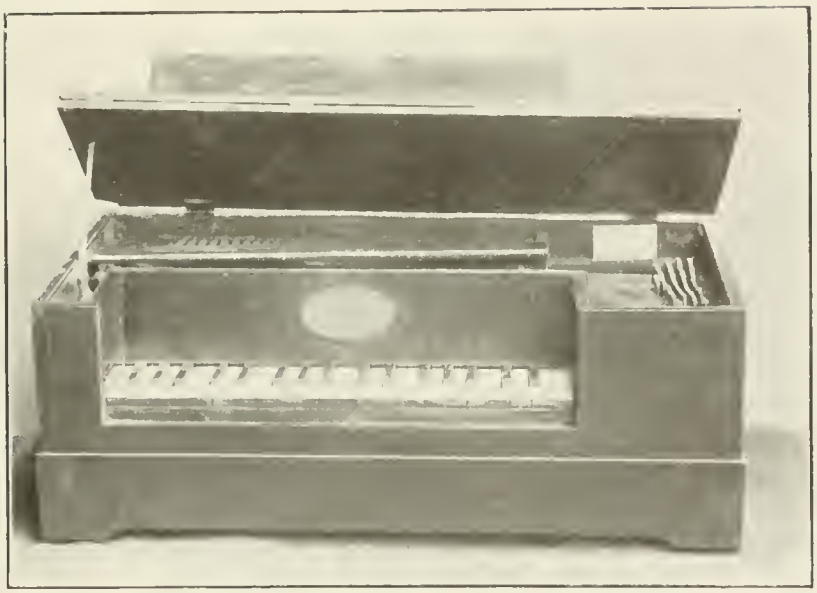
No. 2849

No. 2849

Gallery 28—Central Case

PORTABLE PIANO, same as Plate LXI. Second view, the legs folded under the case.

PLATE LXII



No. 2849

No. 2849

Gallery 28—Central Case

PORTABLE PIANO, same as Plate LXI. Third view, frontboard removed, showing action.

PLATE LXIII

No. 2849

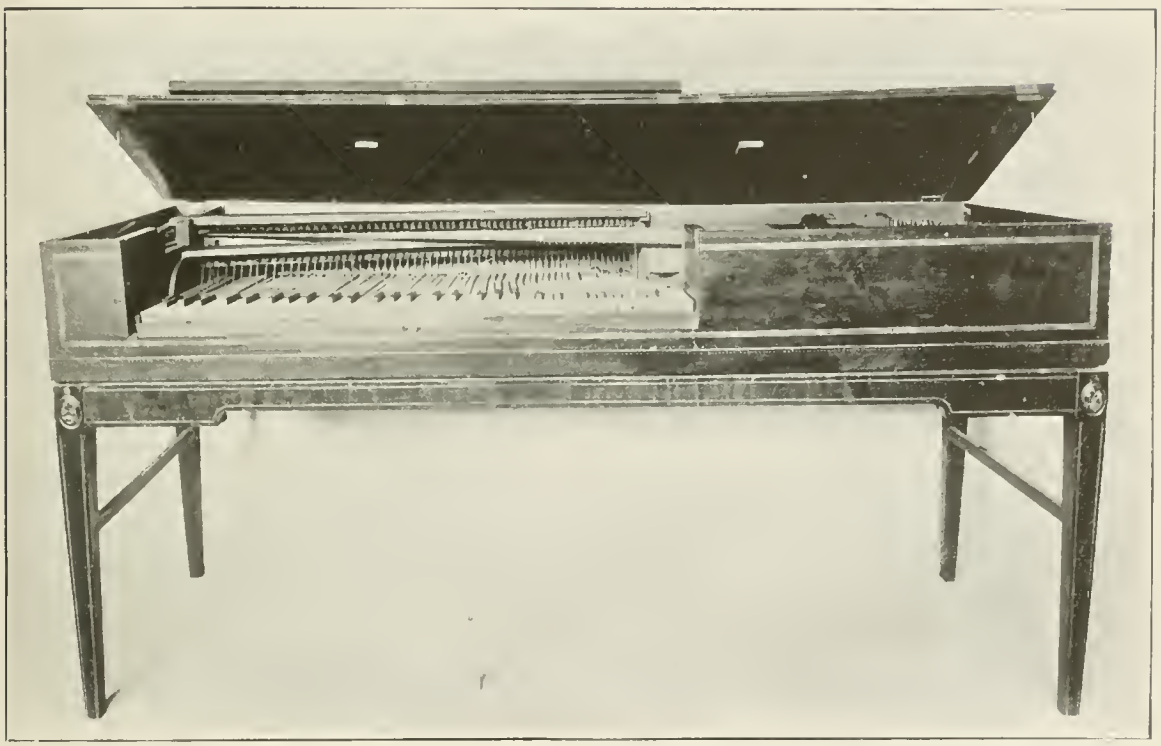
No. 2403

Gallery 28—Central Case

PIANO. Compass, five octaves—F to F. Oblong case of light mahogany, ornamented with inlaid lines, supported upon a four-legged stand similarly inlaid, with brass mounts. Keys, ivory naturals, with black sharps. Two levers on the left-hand side of the case act, respectively, to raise the dampers and mute the strings with soft felt. Bi-cord throughout. England. Late 18th Century. Maker, George Astor, 49 Cornhill, London.

Length, 5 feet 2 inches. Width, 1 foot 10 inches. Depth, 9 inches.

PLATE LXIV



No. 2403

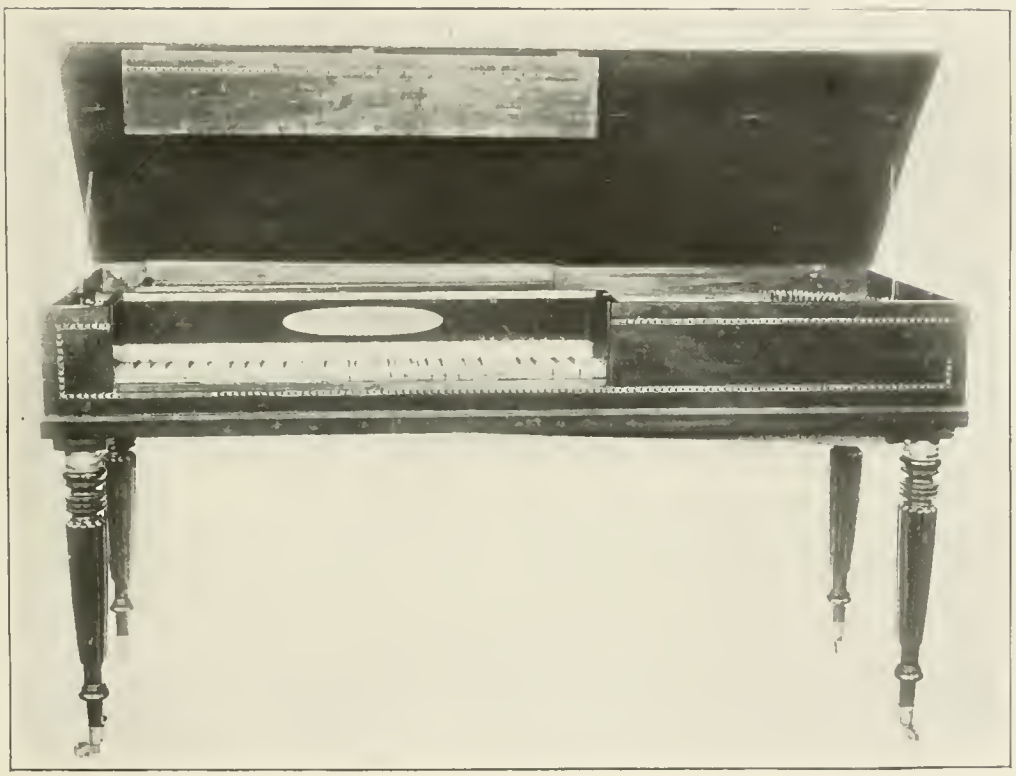
No. 1855

Gallery 25—Central Case

PIANO. Compass, five octaves—F to F. Oblong case of mahogany, decorated with lines of black and white inlay arranged in panels, standing on four turned legs. One forte stop, worked by a lever on the left-hand side of the case, raising the dampers. The action is similar to that used by Zumpe in the pianos first made in England in the latter part of the 18th Century. England. Late 18th Century. Maker, Thomas Western, near Westminster Bridge, London.

Length, 5 feet 2 inches. Width, 1 foot 0 inches. Depth, 9 inches.

PLATE LXV



No. 1855

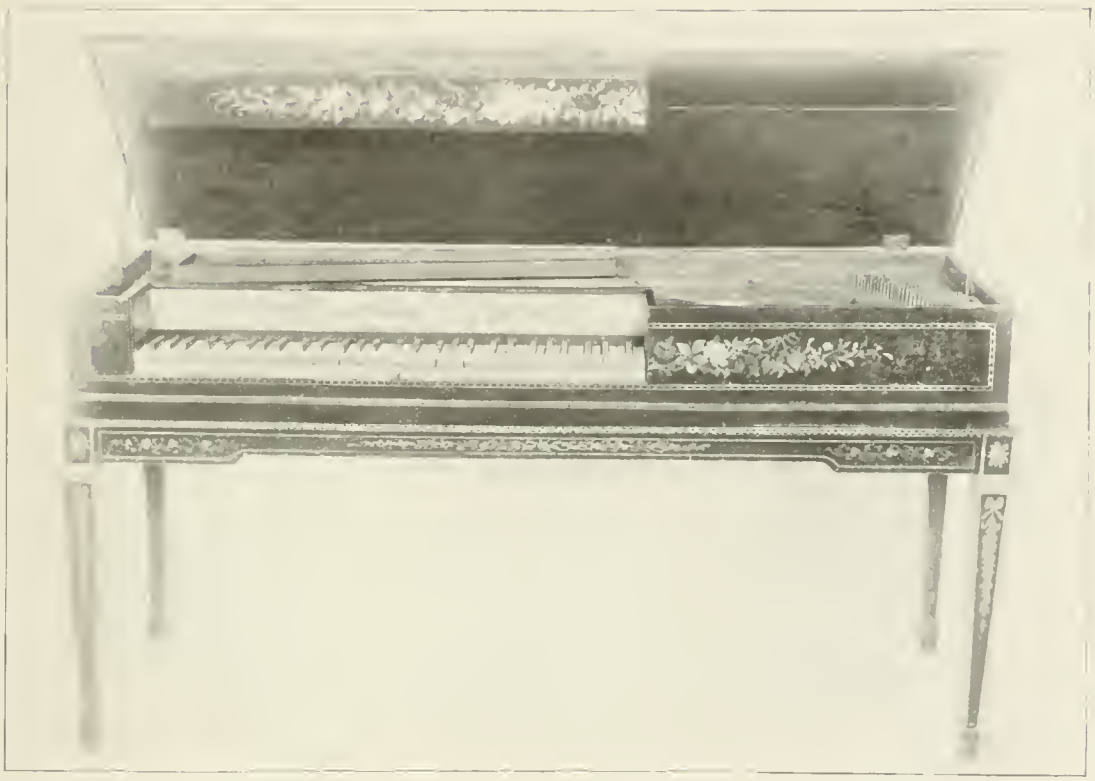
No. 1206

Gallery 28—Central Case

PIANO. Compass, five octaves and two notes—F to G. Oblong mahogany case, inlaid with white wood and finely painted with fruit and flowers, supported on a four-legged stand, also inlaid and painted. Keys, ivory naturals, with black sharps. This instrument formerly had the usual forte pedal of the period. England. Early 19th Century. Maker unknown.

Length, 5 feet 2 inches. Width, 1 foot 10 inches. Depth, $7\frac{1}{2}$ inches.

PLATE LXVI



No. 1206

No. 2805

Gallery 29—Central Case

PIANO. Compass, 5 octaves and a fifth—F to C. Oblong mahogany case with turned legs ornamented with gilt capitals. Keys, ivory naturals, with black sharps. Bi-cord; the last six notes overspun. One forte pedal. The name-plate bears the following inscription: "John Broadwood & Sons, Makers to His Majesty and Princesses. Gt. Poulteney Street, Golden Square, London. 1807."

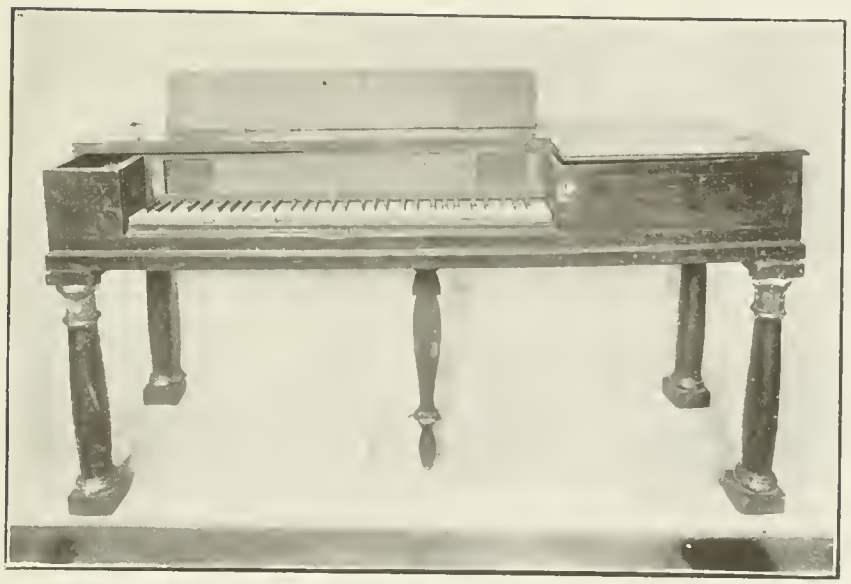
Length, 5 feet 4½ inches. Height, 2 feet 9 inches. Width, 1 foot 11 inches.

John Broadwood was the son-in-law and partner of Tschudi (Shudi), the Swiss harpsichord maker, who established the business at Gt. Poulteney Street in 1732. Upon the death of John Broadwood in 1812, the business was carried on by his two sons, James Shudi and Thomas Broadwood.

The house of Broadwood figured prominently in the development of the early English pianoforte action. Among their contributions may be mentioned the reconstruction of the square piano in 1780 and three years later the patenting of the loud and soft pedals. About 1788 they introduced a new scale grand piano, dividing the curved bridge, and in 1794 made the first piano with six octaves. In 1808 they first applied tension bars to a grand piano. In 1822 they adapted tension bars to the string plate, and five years later patented tension bars and stringplate combined in a grand piano. In 1847 they invented their "Iron" grand pianoforte, and in 1862 introduced the metal pinpiece or wrestplank with screw tuning-pins (not mechanical).

For description, with illustrations of the Broadwood action, see Appendix I, pages 298, 299.

PLATE LXVII



No. 2805

No. 2805

Gallery 29—Central Case

PIANO, same as Plate LXVII. Second view, with frontboard removed, showing action.

PLATE LXVIII

No. 2805

No. 2768

Gallery 29—Central Case

PIANO. Compass, six octaves—F to F. Upright model, the upper part square, a column on either side terminating in a foliated capital. The lower part in cabinet form, the keyboard supported by two carved legs and covered by a rounded lid. The case, polished mahogany; the front, above the keyboard, of crimson brocade. Keys, ivory naturals, with black sharps. The usual Broadwood action, leather hammers covered with white felt and hinged with a bit of parchment. The most interesting point is the length of the abstract from the end of the key to the action proper, which is 2 feet 6 inches. The abstract is attached to the hammer-butt with buckskin, and the damper is also attached to the abstract in this case with wire. Single cord throughout. Length of longest bass string, 5 feet 6 inches; vibrating length of same, 5 feet. Eleven covered bass strings. England. 18th Century. Makers, John Broadwood & Sons.

Height, 6 feet 2½ inches. Width, 3 feet 9 inches.

PLATE LXIX

No. 2768

No. 2768

Gallery 29—Central Case

PIANO. Upright model, same as Plate LXIX. Second view, with screen removed, showing action.

PLATE LXX

No. 2768

No. 1208

Gallery 29—Central Case

PIANO. Compass, six octaves—F to F. Oblong mahogany case, in Sheraton style, with inlaid lines and brass mountings, on six turned legs. Keys, ivory naturals, with black sharps. One forte pedal raising the damper. John Geibs hopper action, invented in 1780. England. c. 1800. Makers, Clementi & Co., London.

Length, 5 feet 7½ inches. Width, 2 feet. Depth, 9 inches.

Muzio Clementi in partnership with William Frederick Collard, took up the business of Longman and Broderip, about the year 1800. In 1773, when Clementi was eighteen years of age, he composed his famous Sonatas (op. 2) for the piano. This was the first real pianoforte music published, and formed the foundation of the true school of pianoforte-playing.

PLATE LXXI

No. 1208

No. 2804

Gallery 29—Central Case

PIANO. Compass, five octaves and a fourth—F to C. Mahogany case, supported on four square, tapering legs, inlaid with whitewood and ornamented with brass mounts. The upper part in cabinet form enclosing the works, the unoccupied space being utilized with shelving. Two glass doors, lined with antique white velvet, decorated with painting of musical instruments, much discolored. Keys, ivory naturals, with black sharps. Early English action. Tri-cord throughout. Divided bridge. Two pedals. England. 1801. Maker, W. W. Stodart, Golden Square.

Height, 8 feet 8 inches. Width, 3 feet 7½ inches. Depth, 1 foot 10 inches.

PLATE LXXII

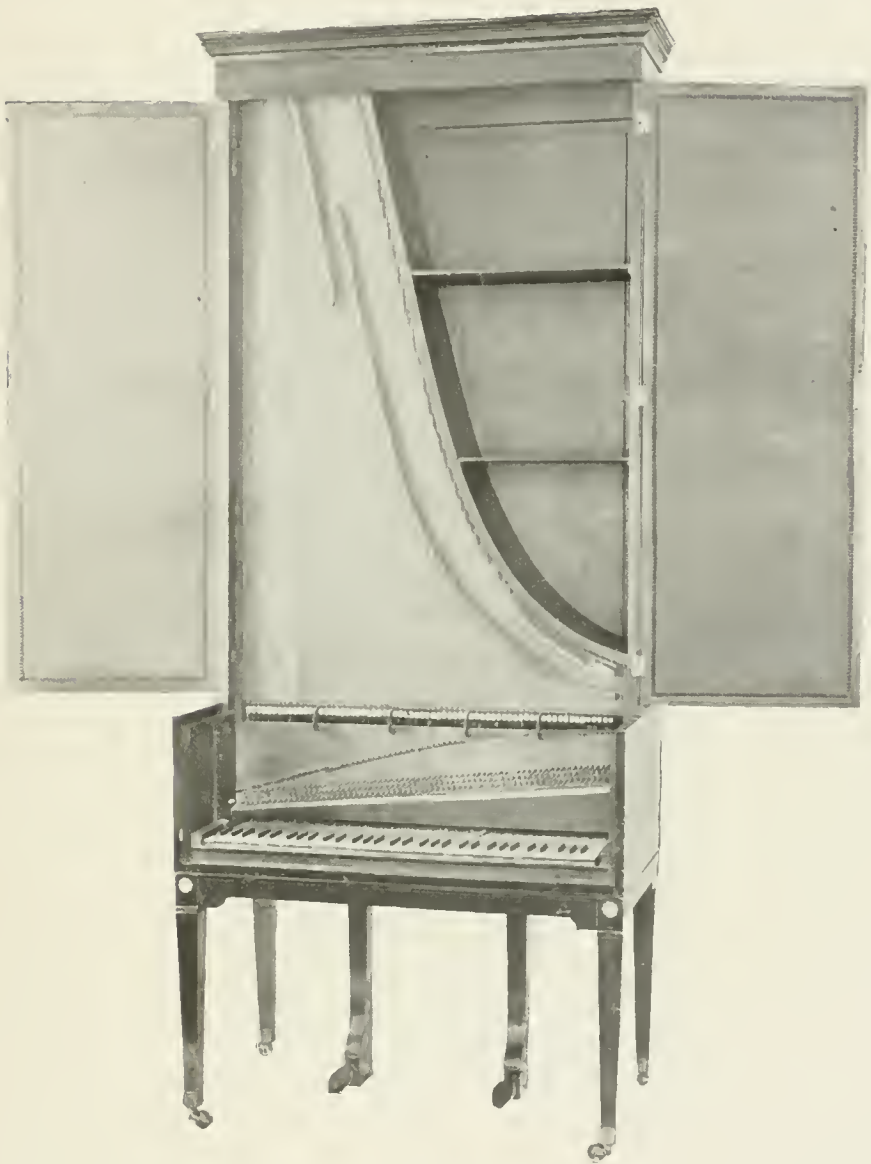
No. 2804

No. 2804

Gallery 29—Central Case

PIANO. Upright model, same as Plate LXXII. Second view, with doors open and screen removed, showing action.

PLATE LXXIII



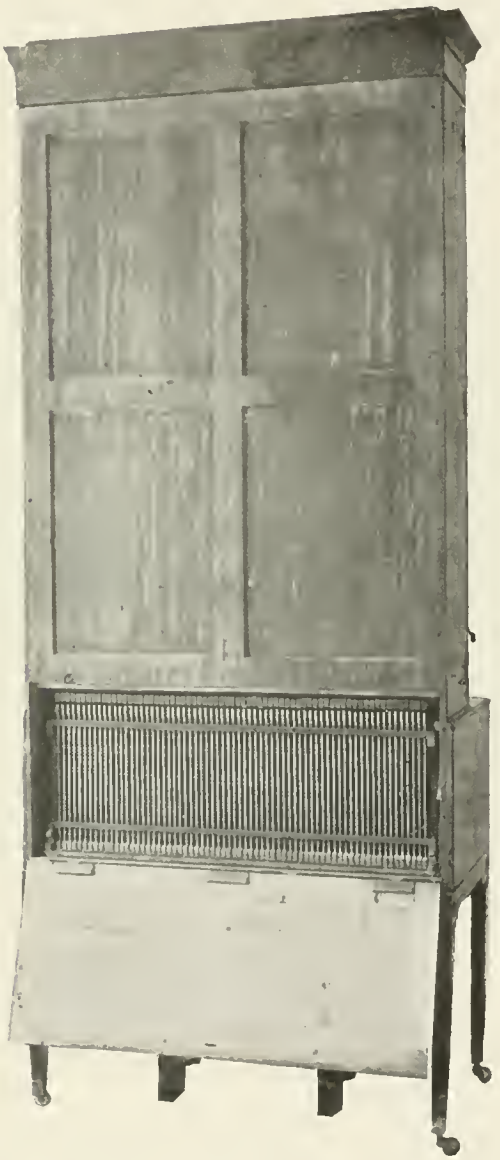
No. 2804

No. 2804

Gallery 29—Central Case

PIANO. Upright model, same as Plate LXXII. Third view, showing back, with panel removed.

PLATE LXXIV



No. 2804

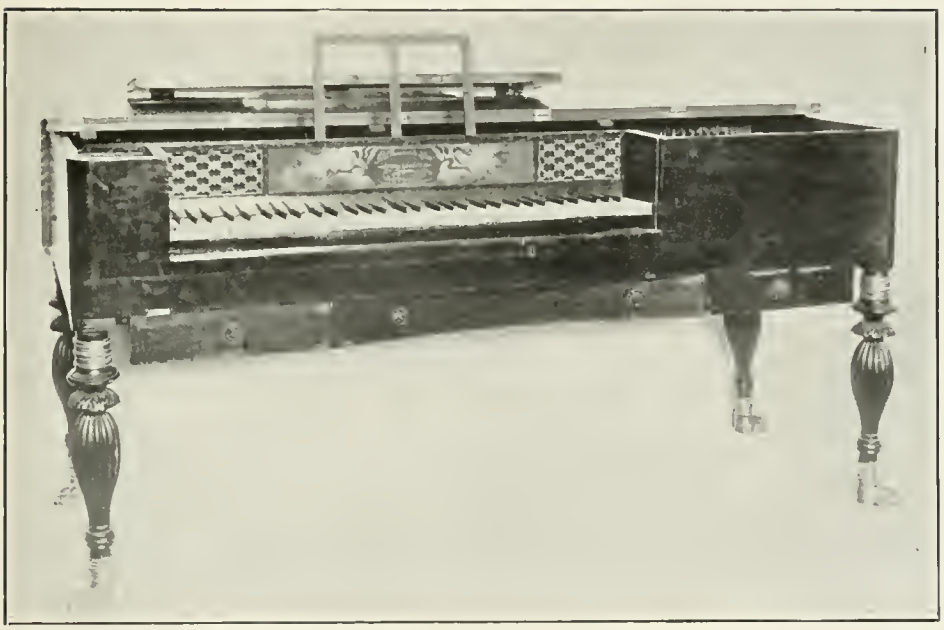
No. 2718

Gallery 28—Central Case

PIANO. Compass, five octaves and a sixth—E to C. Oblong case of mahogany with rounded corners; carved legs with brass claw feet. Three drawers below the keyboard. Keys, ivory naturals, with black sharps. Early English action with divided bridge. England. 18th Century. Makers, Evenden & Sons, London.

Length, 5 feet 6 inches. Height, 2 feet 8 inches. Depth, 2 feet 2½ inches.

PLATE LXXV



No. 2718

No. 2718

Gallery 28—Central Case

PIANO, same as Plate LXXV. Second view, with front board removed, showing action.

PLATE LXXVI

No. 2718

No. 2147

Gallery 29—Central Case

PIANO. Five octaves—F to F. Oblong mahogany case, ornamented with raised brass lines and resting on four turned legs. Keys, ivory naturals, with black sharps. Bi-cord throughout. This instrument originally had two knee or pedal levers, the invention of Érard, 1794, which respectively raised the dampers and muted the strings by lifting a beam covered with soft leather. France. 1800. Makers, Érard Frères et Cie., Rue du Mail, No. 37a, Paris.

Length, 4 feet 10½ inches. Width, 2 feet. Depth, 8 inches.

Sebastian Érard was the first to make pianos in France (1777). At the time of the French Revolution he went to London, and returning in 1796 introduced a grand piano. Among the improvements in the development of the pianoforte action, the Érards are credited with the following: In 1808 they patented the upward bearing and the "céleste" pedal; in 1821 the double escapement action, and four years later they patented bolts to tension bars. In 1838 they introduced the "Harmonic Bar."

In 1824 Liszt made his début in Paris, using an Érard grand piano of seven octaves, C to C.

PLATE LXXVII

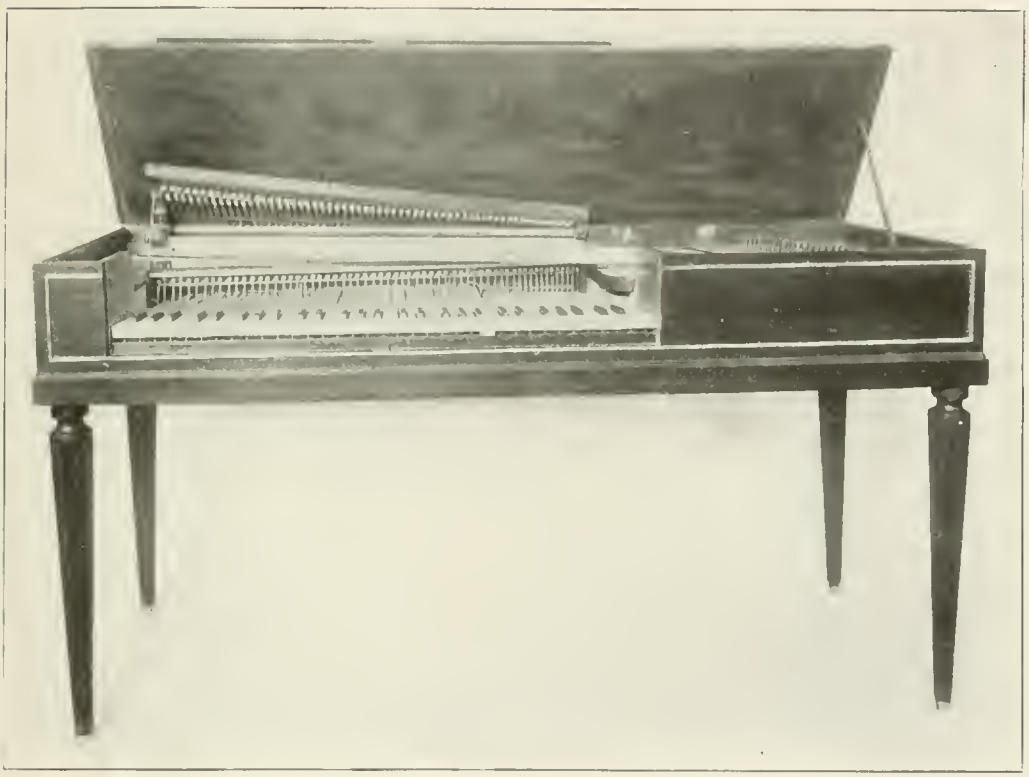
No. 2147

No. 2147

Gallery 29 - Central Case.

PIANO, same as Plate LXXVII. Second view, with frontboard removed, showing action.

PLATE LXXVIII



No. 2147

No. 1951

Gallery 28—Central Case

PIANINO. Five octaves—F to F. Narrow oblong mahogany case, with cut corners, resting on four square legs. Keys, ivory naturals, with black sharps. No pedals or stop levers. Europe. Late 18th Century. Maker unknown.

Length, 3 feet 6 inches. Width, 1 foot 2½ inches. Depth, 6 inches.

PLATE LXXIX

No. 1951

No. 1199

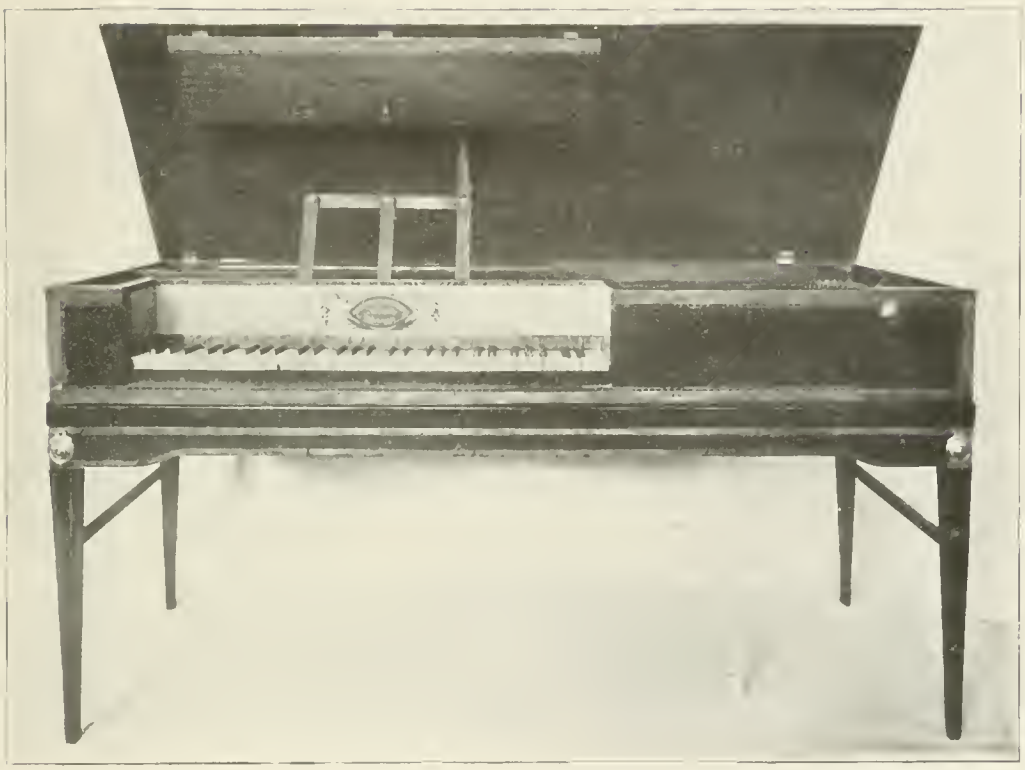
Gallery 29—Central Case

PIANO. Five octaves—F to F. Oblong case of mahogany, inlaid with white wood and ornamental lines, resting on a stand with four legs, brass mounted. Keys, ivory naturals, with black sharps. A forte lever on the left-hand side of the case raises the dampers. Bi-cord. U. S. A. Late 18th Century. Maker, Chas. Albrecht, Philadelphia.

Length, 5 feet 2¾ inches. Width, 2 feet 9 inches. Depth, 9 inches.

Charles Albrecht, a German, began making pianos in Philadelphia as early as 1789. In Spillane's "History of the American Pianoforte" (New York, 1890, p. 77), reference is made to the above instrument, describing it as having "a beautifully finished and inlaid case, that is almost a composite work of art in itself, and speaks much for Albrecht's skill and æsthetic perceptions. It contains some distinctly original ideas in detail in the form of the case, which go to show that the person referred to was no mere plagiarist of mechanical principles, but an improver."

PLATE LXXX



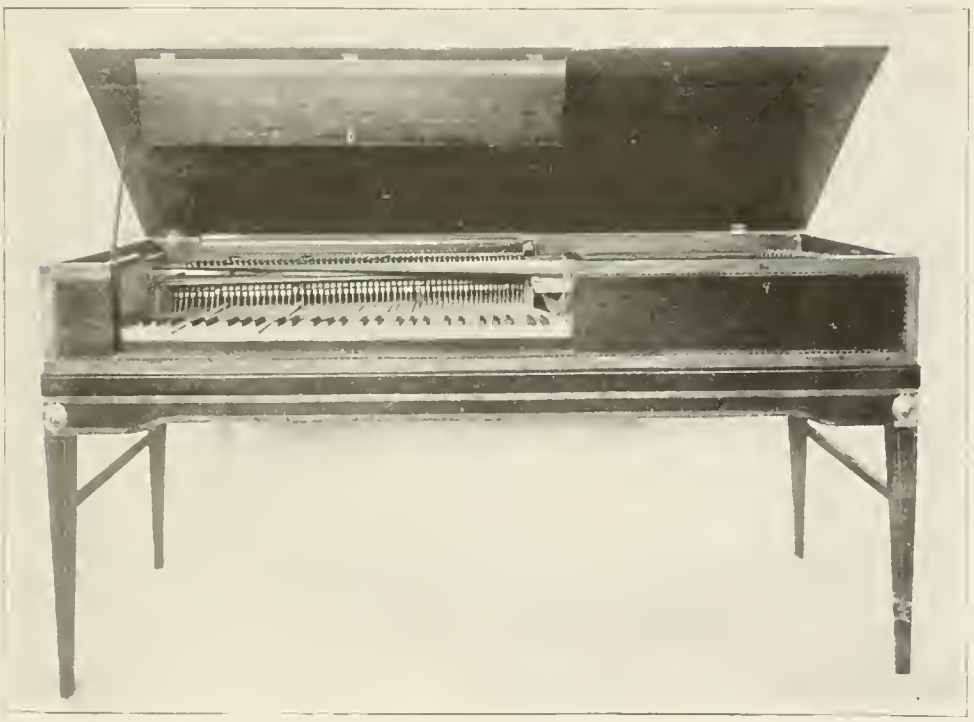
No. 1199

No. 1199

Gallery 29—Central Case

PIANO, same as Plate LXXX. Second view, with frontboard removed, showing action.

PLATE LXXXI



No. 1199

No. 2858

Gallery 29—Central Case

PIANO. Compass, five octaves and a fifth—F to C. Oblong mahogany case with inlaid lines. Keys ivory naturals with black sharps. Bi-cord throughout, the eight lower bass notes over-spun. Originally furnished with a forte pedal raising the dampers. U. S. A. c. 1800. Maker, Benjamin Crehore, Boston.

Length, 5 feet 6½ inches. Width, 1 foot $11\frac{1}{4}$ inches. Height, 2 feet $9\frac{1}{2}$ inches.

Benjamin Crehore was born in Milton, Mass., where he died in 1819. He was the first to make pianos in Boston, about 1798-1800. The date of his earliest piano is not known, but in 1791 he had already acquired a reputation in Boston, New York and Philadelphia, as a maker of violins and other instruments.

PLATE LXXXII

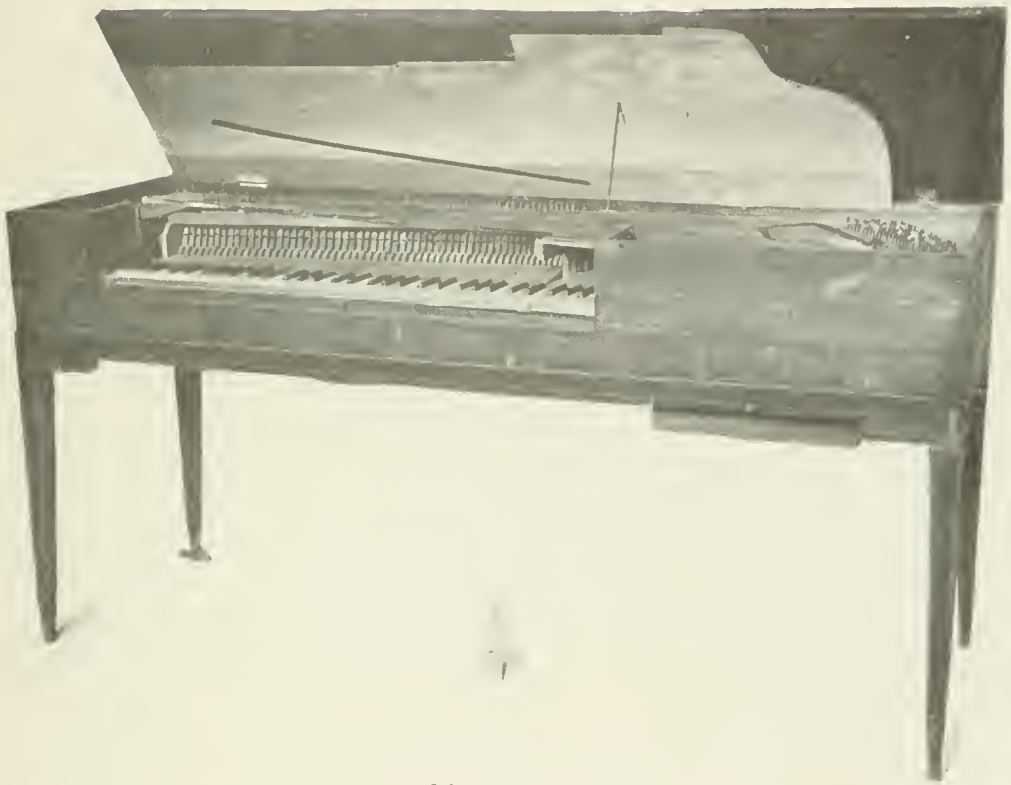
No. 2858

No. 2858

Gallery 29—Central Case

PIANO, same as Plate LXXXII. Second view, with frontboard removed, showing action.

PLATE LXXXIII



No. 2858

No. 2945

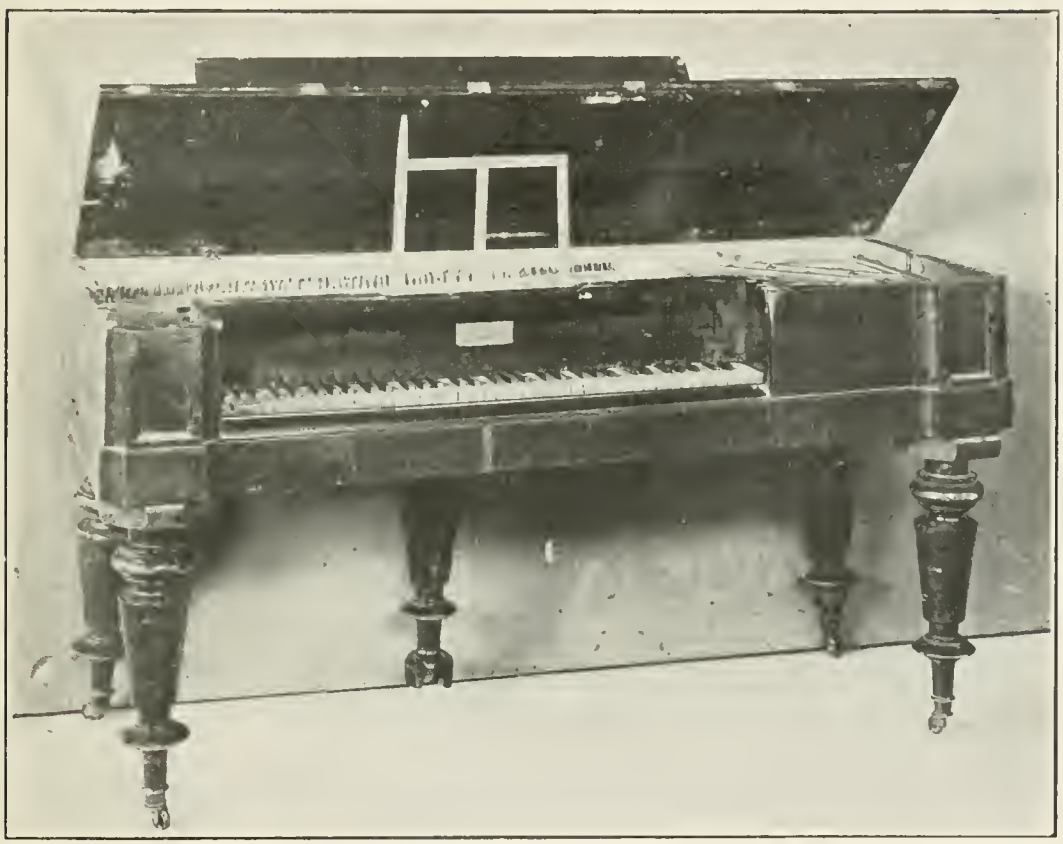
Gallery 29—Central Case

PIANO. Compass, six octaves, F to F. Oblong mahogany case with turned legs. Keys ivory naturals with black sharps. Bi-cord; the six lower notes over-spun. Boston, U. S. A., c. 1833. Maker, Conrad Meyer.

Length, 5 feet $7\frac{3}{4}$ inches. Height, 2 feet $11\frac{1}{4}$ inches. Width, 2 feet $4\frac{1}{4}$ inches.

Conrad Meyer was born in Marburg, Hesse-Cassel. He emigrated to Baltimore in 1813 and subsequently settled in Philadelphia, where he died in 1881. In 1832 he introduced a piano with an iron frame, thus initiating the system of metal plates.

PLATE LXXXIV



No. 2945

No. 2812

Gallery 29—Central Case

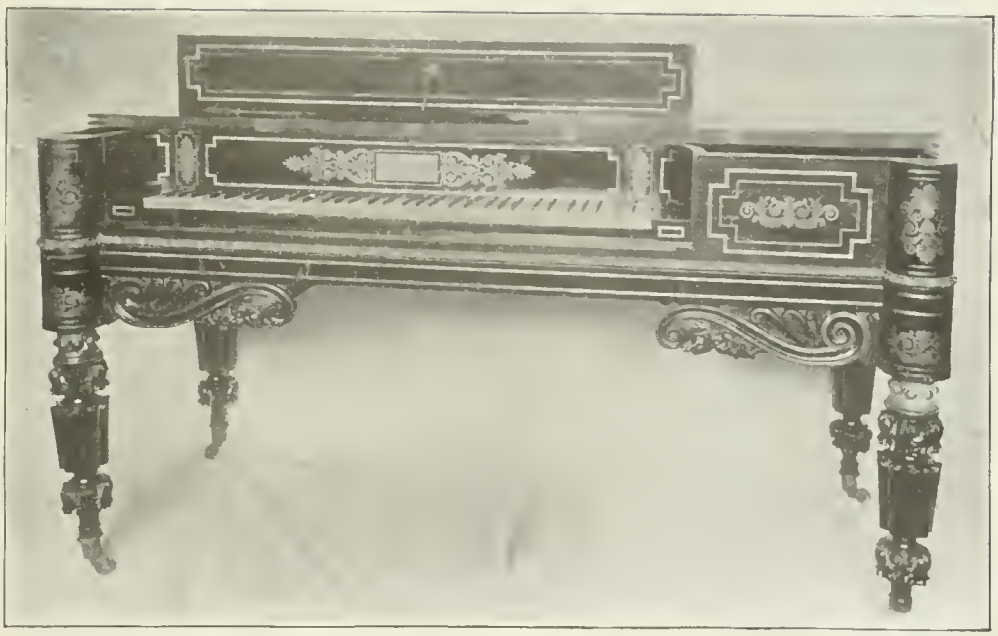
PIANO. Compass, six octaves—E to E. Oblong mahogany case profusely ornamented in gilt and brass moulding, with carved pieces under the keyboard. Carved legs. Keys, ivory naturals, with black sharps. Bi-cord; the last eight notes overspun, the six lower notes single. Makers, Loud Brothers, Philadelphia. Early 19th Century.

Length, 5 feet 9 inches. Height, 3 feet. Width, 2 feet 5 inches.

Thomas Loud, Sr., whose sons formed the above firm, was an Englishman and the first pianoforte maker to introduce overstringing, which he patented in England in 1802. He afterwards emigrated to New York, where in 1822 he had a small repair shop at 102 Canal Street, afterwards transferring his business in 1828 to Walker Street, and later to Broadway near Grand Street. He died in 1834.

Thomas Loud, Jr., the founder of the firm of Loud Bros., was in business in Philadelphia as early as 1816. The name "Loud Bros." first appears in 1822. The firm was famous in its day, doing a large business until 1837 when it met with reverses and suspended manufacturing. Later the firm of Loud & Company was established and continued in business until 1854.

PLATE LXXXV



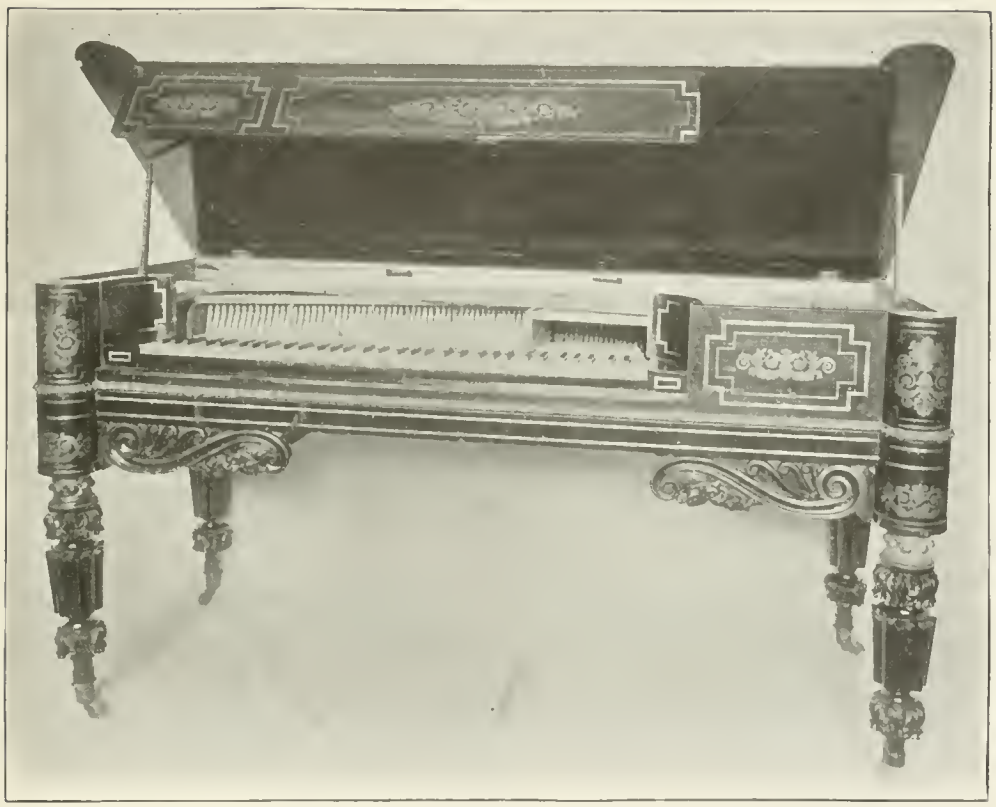
No. 2812

No. 2812

Gallery 29—Central Case

PIANO, same as Plate LXXXV. Second view, with frontboard removed, showing action.

PLATE LXXXVI



No. 2812

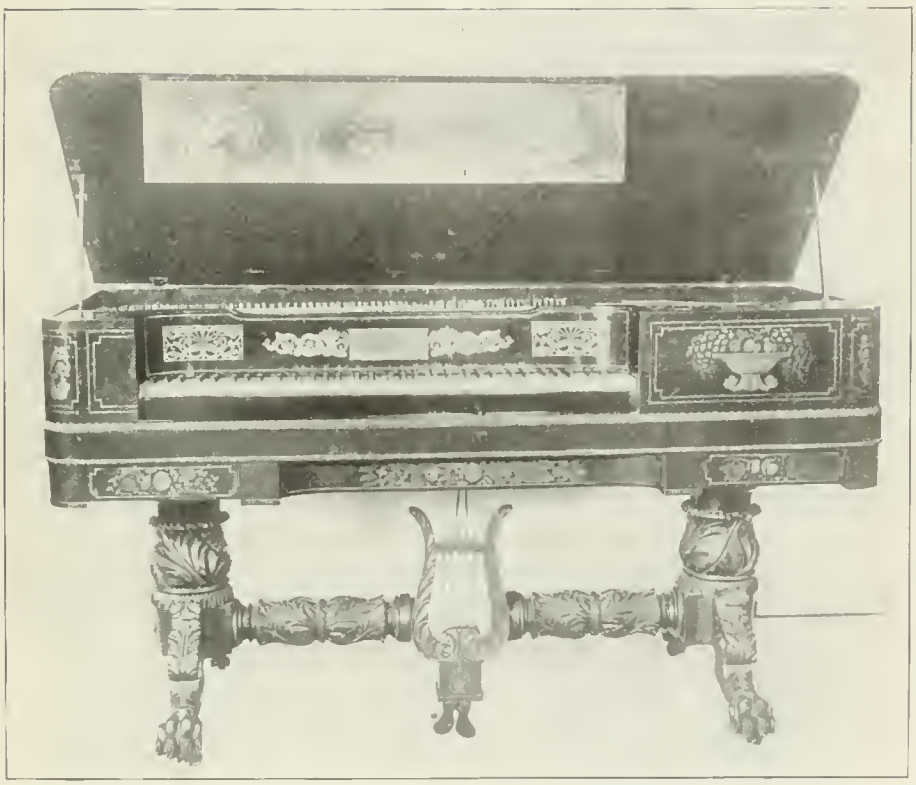
No. 1198

Gallery 28—Central Case

PIANO. Compass, six octaves—F to F. Oblong case of dark mahogany, with rounded corners, supported by a stand of two legs, resting on cross-bars. The case profuse in gilt decoration of conventional designs of fruit and flowers. The stand elaborately carved, with claw feet having in the centre a lyre supporting the pedals. Keys, ivory naturals, with black sharps. Two pedals; one forte, raising the dampers, the other muting the strings with leather. Hitch-pins attached to an iron frame. Bi-cord, the five lower strings single. U. S. A. c. 1825. Maker, John Tallman, New York.

Length, 5 feet 9 inches. Width, 2 feet 2 inches. Depth, 1 foot 3 inches.

PLATE LXXXVII



No. 1198

No. 1187

Gallery 28—Central Case

PIANO HARP. Compass, seven octaves—C to C. This instrument, which is built in the form of a large harp with keyboard attached, rests on a solid base in cabinet form. The curve of the harp, the front pillar and keyboard front decorated with gilt moulding and ornaments in gesso work. Keys, naturals ivory, with rounded fronts; sharps black. Strings of metal; bi-cord; last seven strings single. The loud and soft pedals are placed in the centre below the keyboard. Europe. c. 1800. Maker unknown.

Length, 4 feet 9 inches. Width, 2 feet 1 inch. Height, 7 feet 7 inches.

Mussard, of Lausanne, made pianos of this shape in the early part of the last century.

PLATE LXXXVIII

No. 1187

No. 1228

Gallery 28—Central Case

1228. BOX PIANO. Two views: figure 1, action in place; figure 2, action partially withdrawn. Compass, two octaves and a fifth—F to C. Small square case, covered with ebonized veneer. On the outside of the cover is a medallion painted on the natural wood, representing a large tree, beneath which two maidens are offering gifts at the altar of Diana. In the interior of the cover a medallion in gilt inlay, representing a Roman head. The keyboard draws out for the purpose of playing. Keys, white naturals, with black sharps. Bi-cord. France. c. 1800. Maker unknown.

Length, 1 foot 6 inches. Width, 1 foot 5 inches. Depth, 7¼ inches. This instrument formerly belonged to the Duchess of Parma.

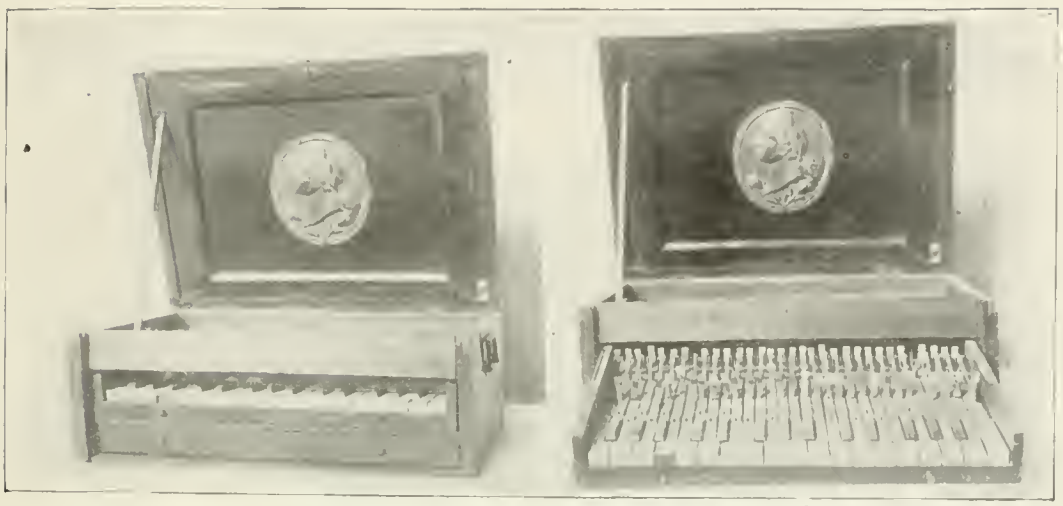
No. 1246

Gallery 28—Central Case

1246. ORPHICA. Two views: figure 1, frontboard in place; figure 2, frontboard removed. Compass, four octaves—F to F. This instrument is in the form of a recumbent harp, with metal strings, and keys enclosed in a walnut case. Keys, ivory naturals, with black sharps. One string to each note. Austria. Invented by August Rollig in 1795.

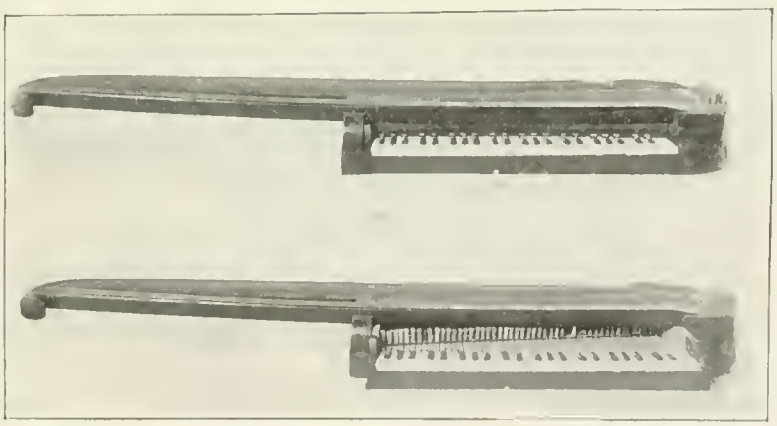
Length, 4 feet 5½ inches. Width, 1 foot 1½ inches.

PLATE LXXXIX



1 2

No. 1228



1

2

No. 1246

No. 1204

Gallery 28—Central Case

WORK-BOX PIANO. Compass, four octaves—F to F. A short, oblong case of dark walnut, inlaid with white wood, standing on a carved leg, with broad base. The cover bearing the figure of an eagle within a wreath. On lifting the cover a work-box is disclosed, with looking-glass. Beneath the tray is the instrument, with recessed keyboard. Printed on the block are these words: "Imported and sold by S. Hart & Sons, portable desk and dressing-case warerooms, Philadelphia." One string to each note, the 12 top notes bi-cord. Europe. Early 19th Century. Maker unknown.

Length, 2 feet 5 inches. Width, 1 foot 6 inches. Depth, 6½ inches.

PLATE XC

No. 1204

III

Keyboard Stringed Instruments, Bowed

Claviola

Corresponding to Class I, Division II, Section C
of Handbook No. 13

No. 2404

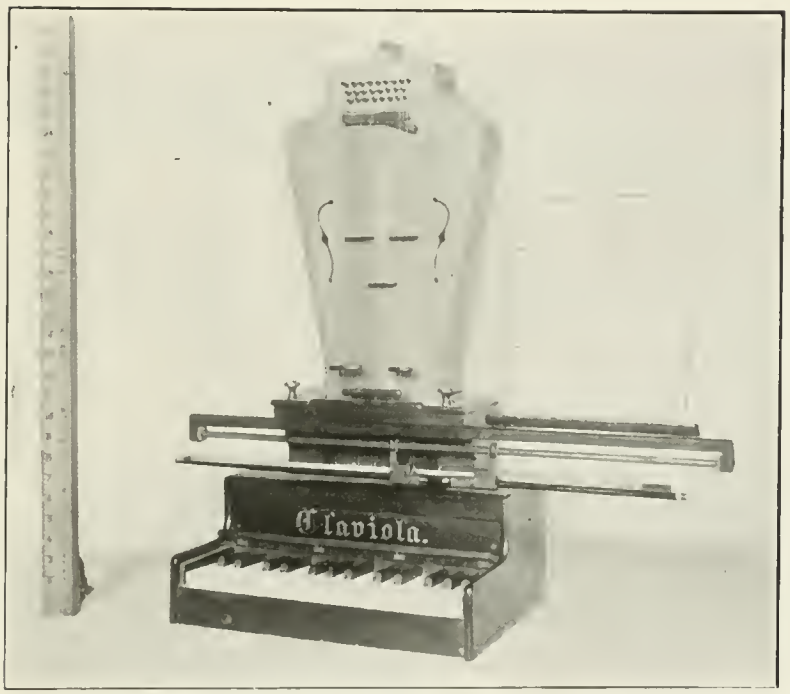
Gallery 28—Central Case

CLAVIOLA. Compass, two octaves and four notes—G to B. Small chest of wood, from which rises a small viol-shaped sound-board, across which are stretched 25 wire strings, resting on 3 bridges. In front a guide, sliding along a brass rod, holds a violin bow. On pressing a key the string is raised and brought into contact with the bow. The four upper notes are produced from the strings in the octave below by means of a small pad on a lever, which touches the lower strings half-way, thereby producing the octave harmonic. Keys, white naturals, black sharps. Europe. Late 19th Century. Maker unknown.

Height, 2 feet 5½ inches. Width, 1 foot 3¾ inches. Length of bow, 2 feet 3½ inches.

The Claviola was invented by John Isaac Hawkins, of Bordentown, New Jersey, an Englishman by birth and an engineer by profession. The invention was introduced in Philadelphia in 1802.

PLATE XCI



No. 2404

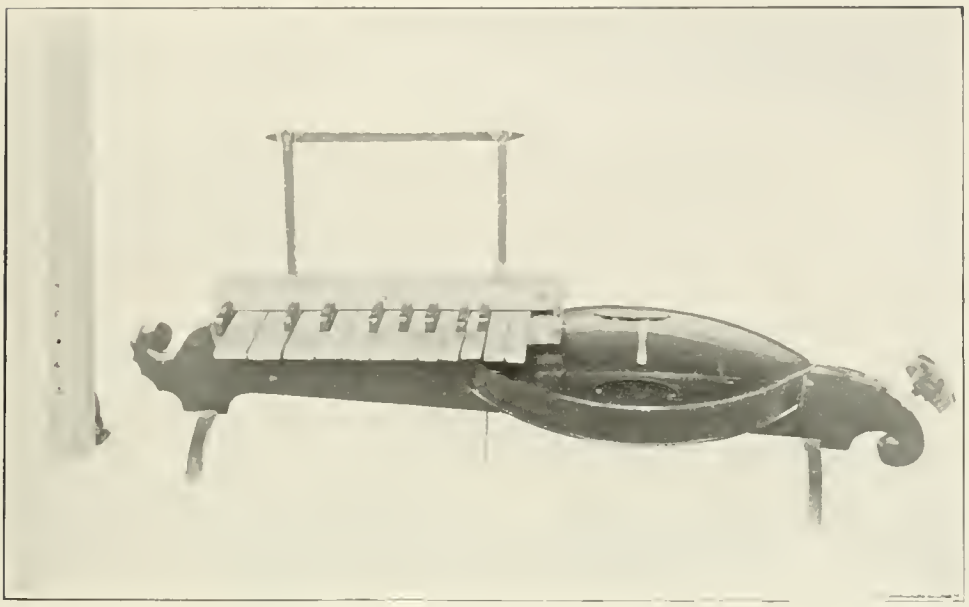
No. 2908

Gallery 28—Central Case

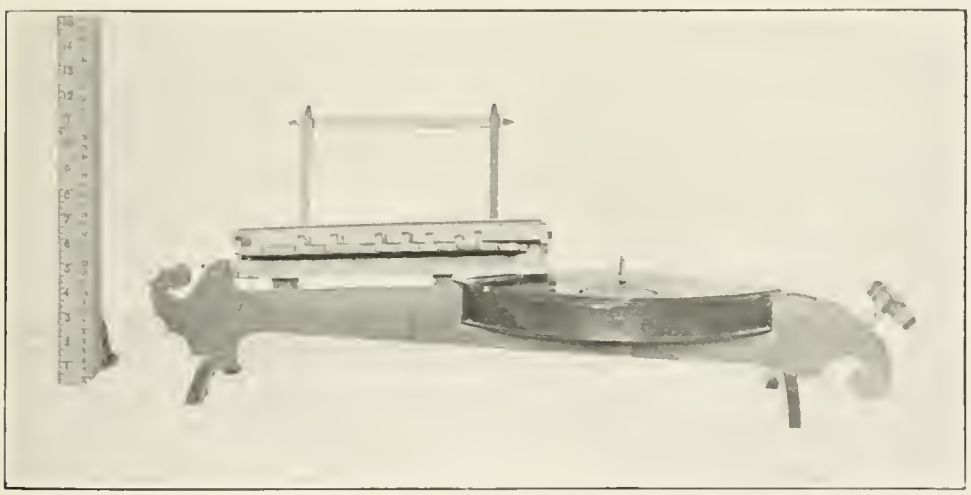
KEYBOARD BOWED INSTRUMENT (TONOMETER?). Compass, one octave and a sixth, B flat to F natural. A shallow soundbox with flat back resting on two cross-bars; the outline somewhat similar to the viol. Reddish-brown varnish. Two C sound-holes. The keyboard, mounted in a small framework or box, is placed on the neck of the instrument. When the keys are depressed they come in contact with three slender wires which, passing under them, rest upon a bridge and are wound about a single peg at the opposite end of the instrument. Keys, boxwood naturals with black sharps. Vosges, France. 1790-1820.

Length, 1 foot 6 inches. Width, 7 inches.

PLATE XCII



1



2

No. 2908

IV

KEYBOARD WIND INSTRUMENTS

ORGANS, HARMONIUMS, ETC.

CORRESPONDING TO CLASS II, DIVISION II, SECTIONS A AND B
OF HANDBOOK NO. 13

No. 2883

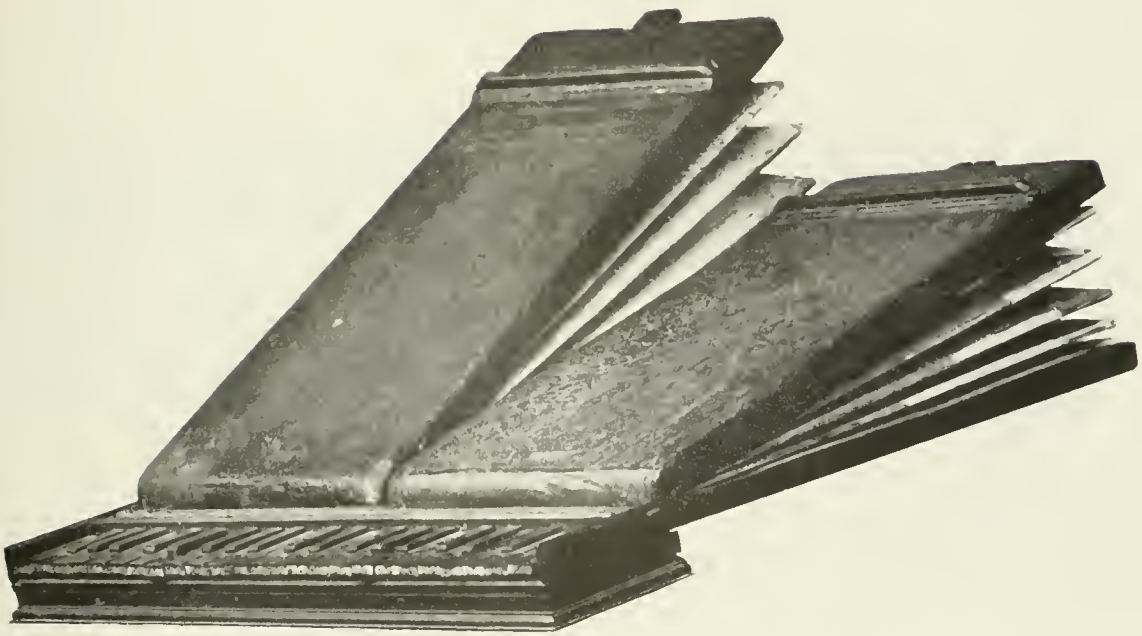
Gallery 26—Central Case

REGAL. Compass, three octaves and a third, F to A. An oblong case of painted wood in two parts, each of which contains a bellows. When the instrument is in use these bellows are fitted to the back of the keyboard, and by lifting them alternately, wind is supplied to a set of small metal pipes fitted with beating reeds placed immediately behind the keys. The interior of the case is lined on one side with sheets of musical manuscript, on the other with illuminated manuscript and a label bearing the following inscription: "Ao 1575 ververdigte Georg Voll Orgelmager in Nuremberger dis orgelwegk ur (?) manzusammen und in die Balge (ge) legt." The keys are light wood naturals with black sharps. When the instrument is closed the keyboard is placed between the bellows which form the case. The original decorations of the case, which have been partially destroyed by several coats of paint, consisted of a monogram, in which the letters V G are distinguishable, surmounted by a coronet, a horn of plenty on either side. Germany, 16th Century.

Length, 2 feet 3½ inches. Width, 11½ inches. Depth, 5½ inches. Dimensions of closed case.

The invention of the Regal is accredited by Adlung to G. Voll, an organ builder living at Nuremberg in the middle of the 16th Century. It was originally built on a small scale and used as a portable instrument in religious processions, especially in the precatory walks of the peasants at harvest time when a blessing was invoked upon the crops. When employed in this way it was suspended from the left shoulder by a strap and the bellows were worked by the left arm, while the right hand touched the keys. It was afterwards built on a larger scale for use in chapels and monasteries.

PLATE XCIII



No. 2883

No. 2883

Gallery 26—Central Case

REGAL, same as Plate XCIII. Second view, showing the interior of the case and the pipes at the back of the keyboard, also the points at which the bellows are attached.

PLATE XCIV

No. 2883

No. 2883

Gallery 26—Central Case

REGAL, same as Plate XCIII. Third view, showing the case closed.

PLATE XCV

No. 2883

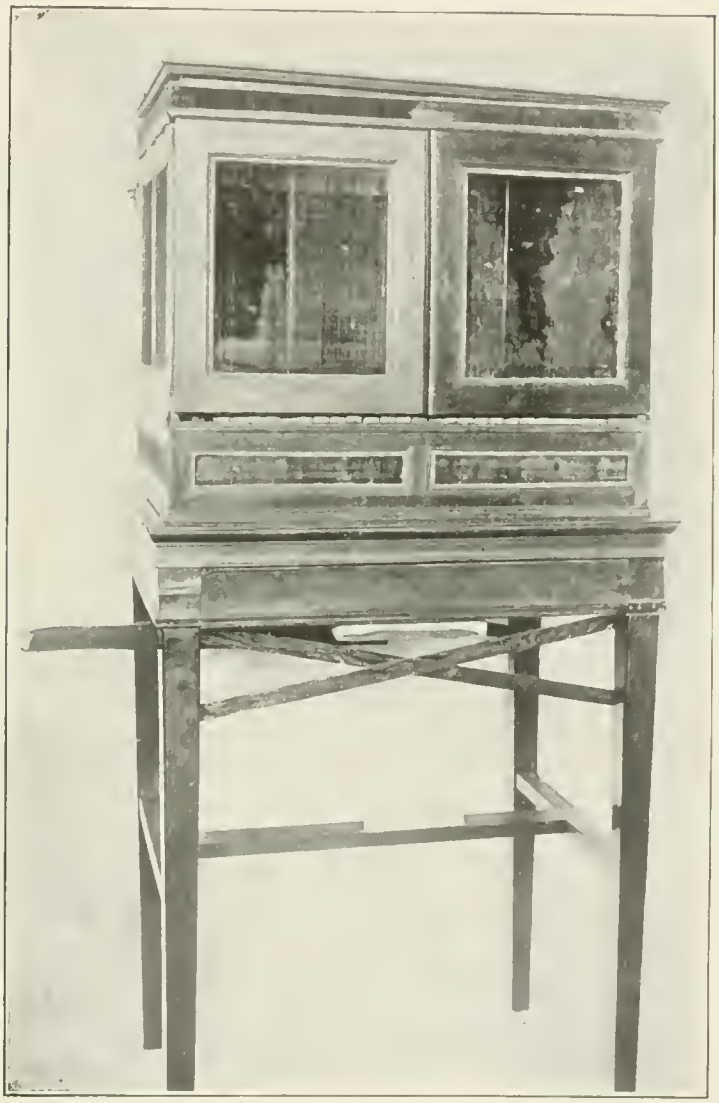
No. 1191

Gallery 26—Central Case

CABINET ORGAN with Removable Spinet. Compass, three octaves and eight notes—C to A. Case of ebony veneered wood in the form of a cabinet, decorated on the outside with panels of antique crimson velvet, supported on a four-legged stand (renewed). On opening the folding doors a cabinet is disclosed, having 14 drawers and a central cupboard with bronze door-mounts, and a decorative bronze panel representing the Entombment of Christ. Below is the keyboard of the organ. Keys, ivory naturals, with black sharps. The lowest octave short; the upper G sharp omitted. On the left-hand side are four stops, admitting the wind to the following registers placed at the back of the case: Stop Diapason, Flute, Super-Octave and Regal, the pipes of the last two registers missing. The organ is blown by a handle attached to the side of the stand of the case, and working a small bellows beneath the cabinet, from which the wind is transmitted to a wind reservoir placed on the top. This may not have been the original method of blowing the instrument. Immediately above the keyboard of the organ is placed in a recess an octave spinet. Compass, three octaves and eight notes. This instrument may be played either within the cabinet or may be withdrawn for separate use. The sound-board is painted with flowers, and has one small rose. Germany, 1598. Maker, Laurentius Hauslais. On the jack-rail of the Spinet is the following inscription: "D. G. Quid posible apud Laurentium Hauslais X Toribergensur," i. e., "By the favor of God, see what Lawrence Hauslais of Nuremberg can do."

Width, 2 feet 5 inches. Height, 2 feet. Depth, 1 foot 10 inches.

PLATE XCVI



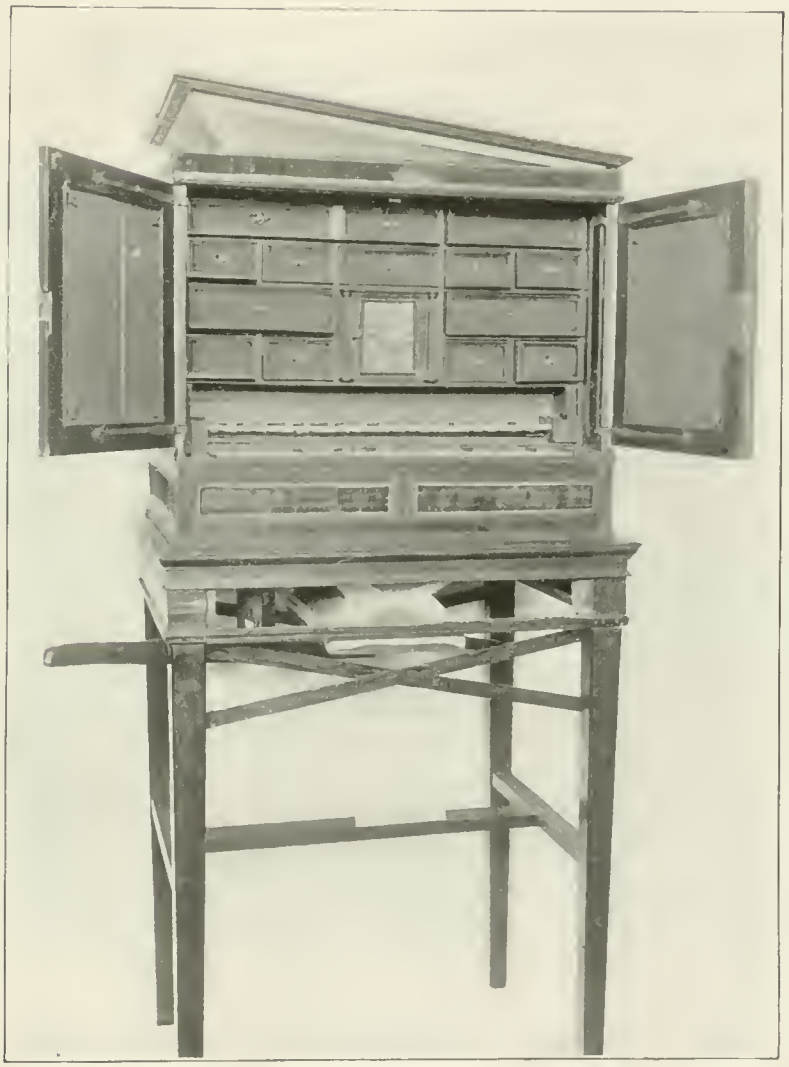
No. 1191

No. 1191

Gallery 26 Central Case

CABINET ORGAN, with removable spinet, same as Plate XCVI. Second view, showing air reservoir distended and spinet in position.

PLATE XCVII



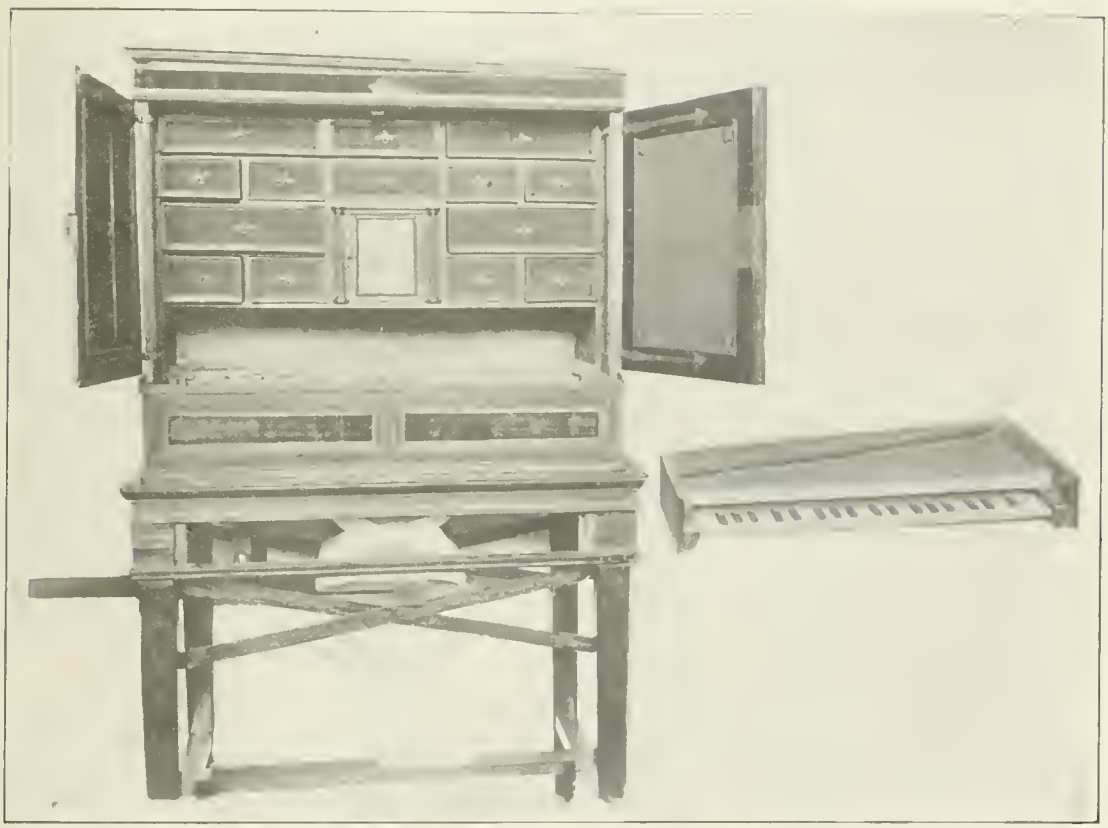
No. 1191

No. 1191

Gallery 26—Central Case

CABINET ORGAN, with removable spinet, same as Plate XCVI. Third view, showing spinet withdrawn.

PLATE XCVIII



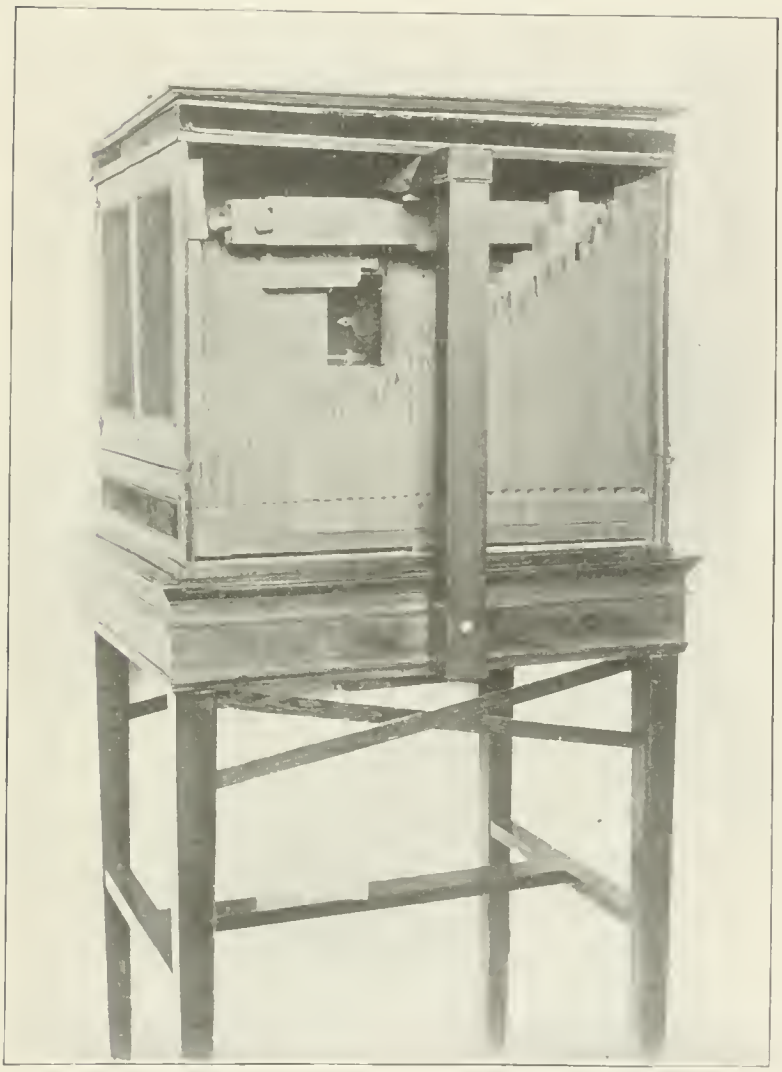
No. 1191

No. 1191

Gallery 26—Central Case

CABINET ORGAN, with removable spinet, same as Plate XCVI. Fourth view, showing pipes at the back.

PLATE XCIX



No. 1191

No. 1188

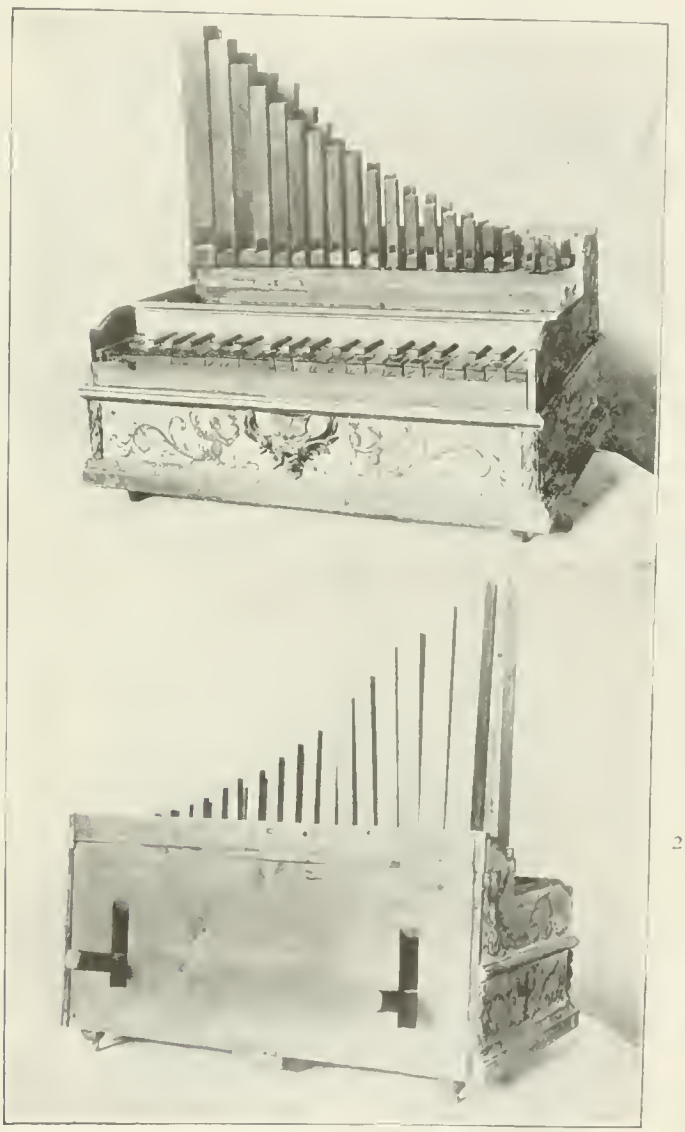
Gallery 26—Central Case

PORTATIVE ORGAN. Two views: figure 1, front view; figure 2, back view. Compass, four octaves and one note—E to F. A low wooden case, exterior painted blue, with conventional ornaments of gilt and gilt moulding; in the centre below the keyboard a grotesque head. At the back and outside the case, one set of wooden open pipes, arranged in two rows. Keys, boxwood naturals, with black sharps. The organ is blown by two small handles attached to small bellows, which fill an air reservoir concealed beneath the pipes. Italy, 17th Century (?). In its present form this instrument contains a great deal of new work.

Length, 1 foot 10½ inches. Depth, 1 foot 5 inches. Height, not including pipes, 11 inches.

The term "Portative" was applied to a little instrument which could be moved easily by one person from place to place, and in its smallest form could be played while carried—as often seen in paintings representing St. Cecilia. A "Positive" was a larger organ, requiring more effort to move and only playable when placed in position.

PLATE C



No. 1188

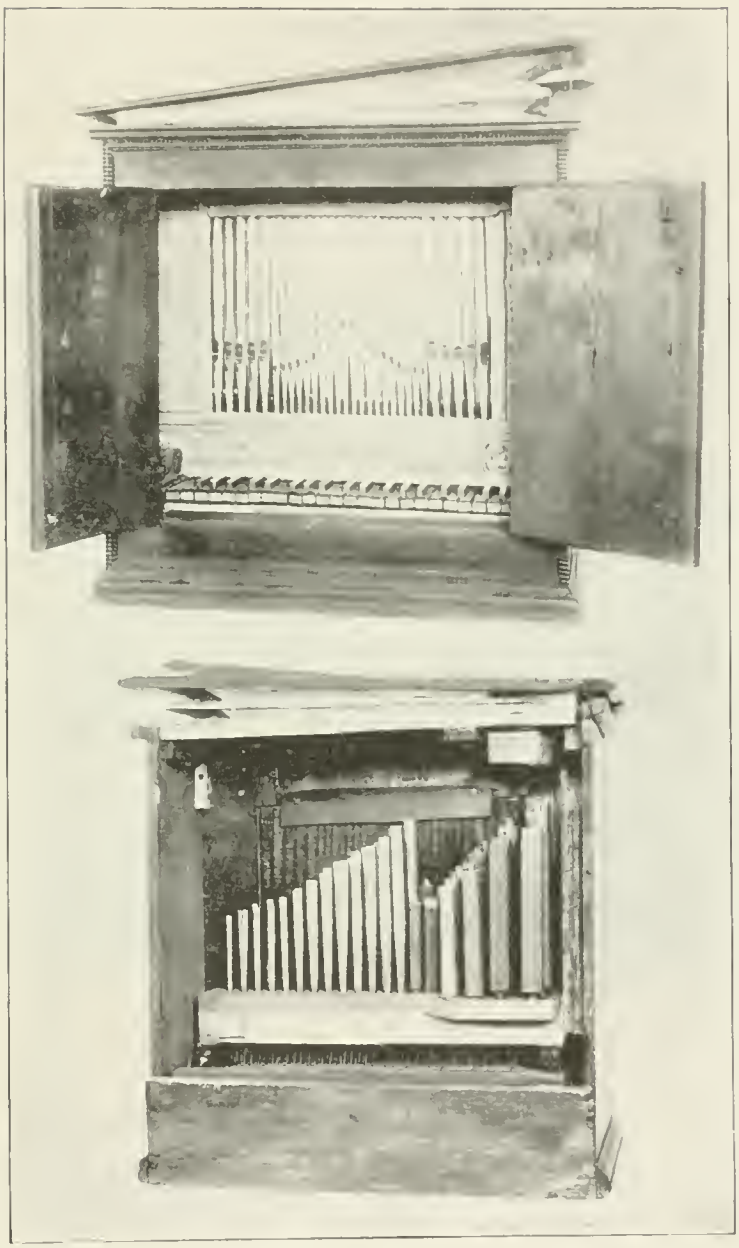
No. 1193

Gallery 26—Central Case

SMALL POSITIVE ORGAN. Two views; figure 1, front view; figure 2, back view. Compass, three octaves and nine notes—C to A; the lowest octave short. Dark wooden case with ordinary beading, the folding doors bearing two coats of arms. 42 pipes within the cabinet; a carved screen with ornamental pipe-front conceals one set of sounding pipes; the treble of open metal, the bass of stopped wood arranged in two rows. On each side of the keyboard a block with carved scroll. No stops. Keys, ebony naturals with gilt fronts, ivory sharps. The organ is blown by two small bellows on the top of the instrument, raised alternately. Germany. Early 17th Century. Maker unknown.

Height, 2 feet 10 inches. Width, 1 foot 7 inches.

PLATE CI



No. 1193

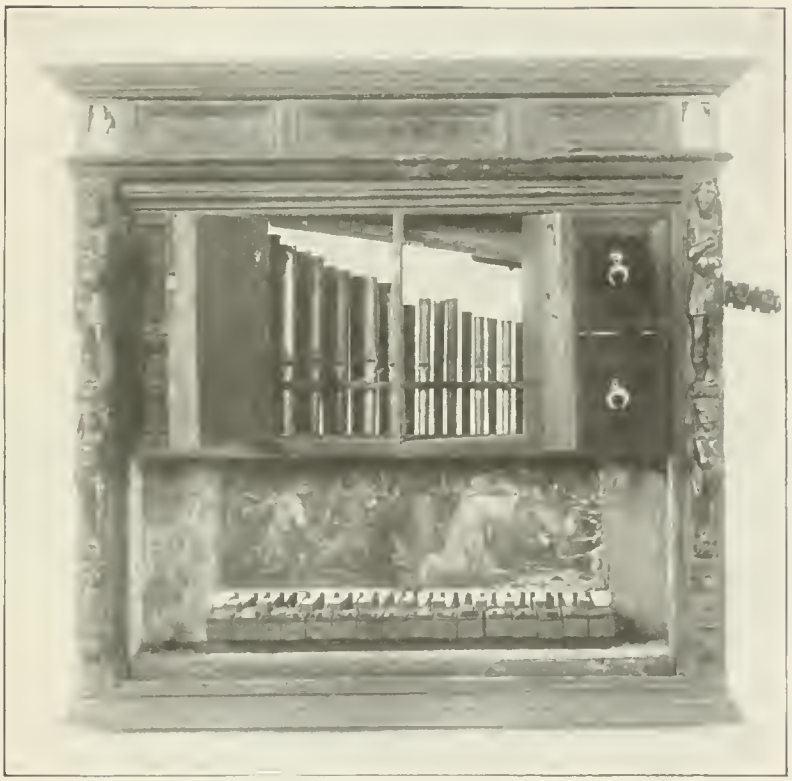
No. 1190

Gallery 26—Central Case

SMALL CABINET ORGAN. Compass, two octaves and two notes—C to D. Walnut case in cabinet form, almost black from age, with carved pilasters, representing human figures, at each side, and ivory plaques inserted in the corners, representing saints in prayer; in front, four small drawers, with central cupboard, having folding doors carved, with brass mounts. Immediately above the keys, which are placed within a recess beneath the drawers, lined with antique velvet, an oil painting representing the raising of Dorcas. At the back of the cabinet one set of metal pipes, arranged in two rows. Keys, ebony, with white sharps. The organ is blown by a carved hand-lever, which projects from the right-hand side of the cabinet. The air reservoir (now missing) was originally placed on top of the cabinet. Beautiful instrument. Germany. Early 17th Century. Maker unknown.

Height, 1 foot 9 inches. Width, 1 foot 11 inches. Depth, 12½ inches.

PLATE CII



No. 1190

No. 2027

Gallery 26—Central Case

BIBLE REGAL. Two views: figure 1, folded between the bellows; figure 2, keyboard and bellows in position. Compass, four octaves—C to C. An oak case in book form, placed at the back of the keyboard, contains two bellows, which were lifted alternately, supplying wind to the instrument. Immediately behind the keyboard is a set of pipes, furnished with beating reeds, placed on their sides. Keys, light wood naturals, with black sharps. The keyboard folds in the middle, and with the pipes can be placed within the book-shaped case; hence the name Book or Bible Organ. Germany. 17th Century. Reproduction. Original in the Galpin Collection, Hatfield, England.

Length, 1 foot 7 inches. Width, 1 foot. Depth, 8 inches. Dimensions of closed case.

PLATE CIII

No. 2027

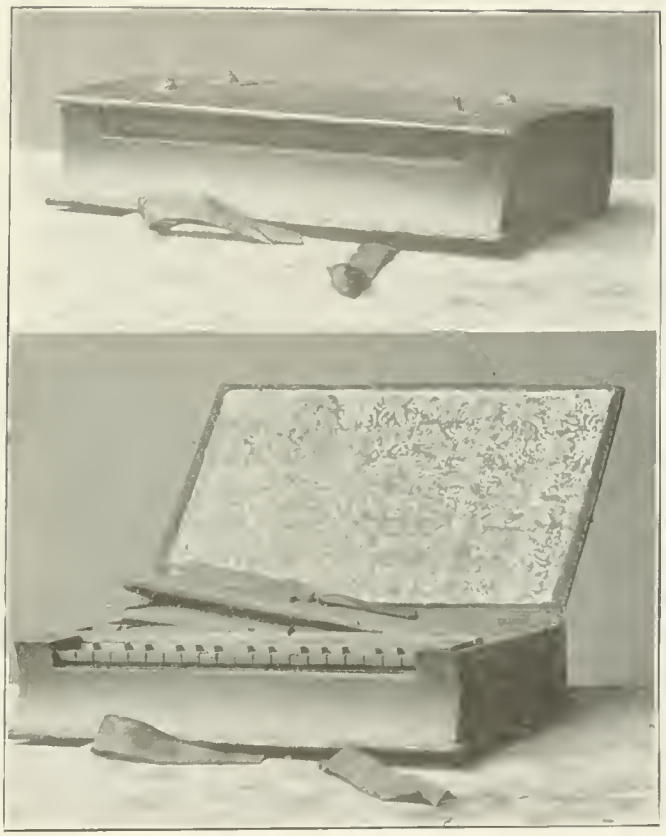
No. 2601

Gallery 26—Central Case

BOOK ORGAN. Two views: figure 1, closed; figure 2, open, showing bellows. Compass, two octaves and eight notes— A to C. A case in the form of an old missal book, covered with brown leather, and ornamented with large embossed mounts of pierced brass. On loosening the leather fastenings and raising the cover, immediately in front is found the keyboard, and at the back two long bellows, furnished with lead weights, and raised alternately by two leather straps. Below the keyboard are placed the reeds, on the single beating principle, as in the old Regal organs. Keys, stained boxwood naturals, with black sharps. France. 17th Century. Maker unknown.

Length, 1 foot 7 inches. Width, 12½ inches. Depth, 4½ inches.

PLATE CIX



No. 2601

No. 1668

Gallery 26—Central Case

BOOK ORGAN. Compass, two octaves and seven notes—F to C. A case in the form of four folio books, covered with stamped leather, each bearing the title, "Traité des Pais Bas." Within the cover is attached an engraving of the Supper at Emmaus. On opening the cover, which is formed by the first volume, immediately in front is the keyboard; at the back, a bellows moved by a lever with a carved handle outside the case, and consisting of one small bellows and an air reservoir. Below the case are the reeds, on the free reed principle. Keys, black naturals, with white sharps. France. The case appears to be old—17th Century; the interior renewed. Maker unknown.

Length, 1 foot 7¼ inches. Width, 1 foot 2 inches. Depth, 9¼ inches.

PLATE CV

No. 1668

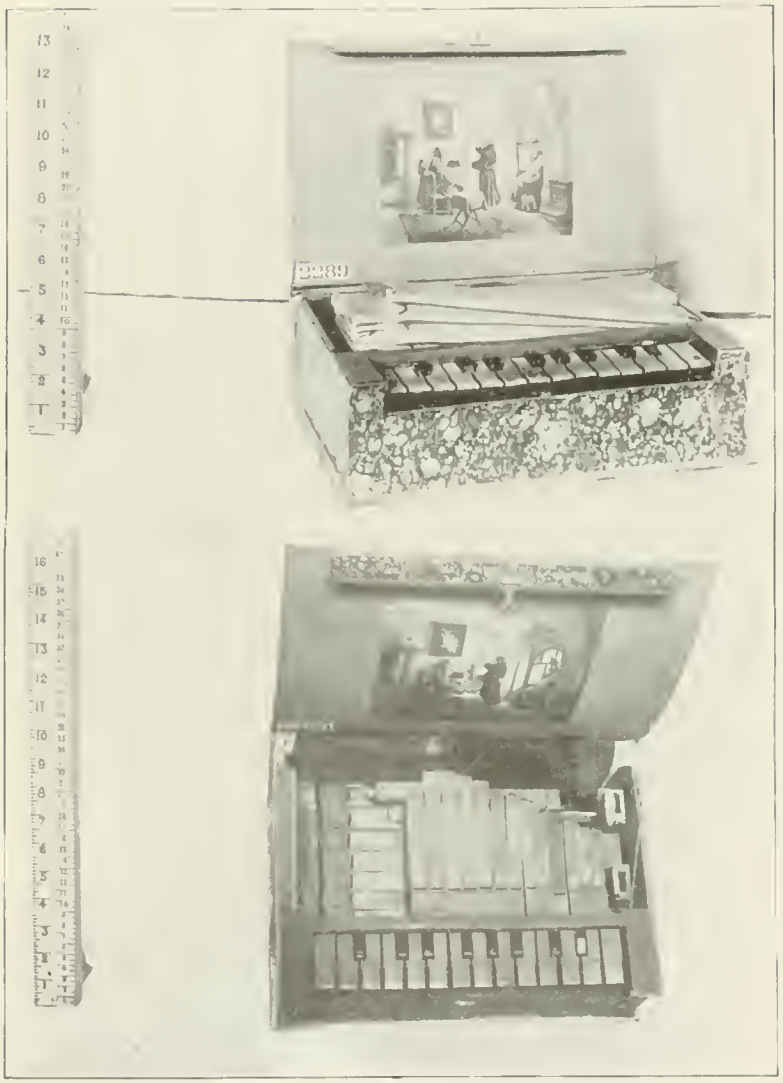
No. 2289

Gallery 26—Central Case

BOOK ORGAN. Two views: figure 1, keyboard and bellows in position; figure 2, bellows removed, showing pipes. Compass, one octave and ten notes—G to F. Bottom G sharp omitted. A case in the form of a parchment-covered book. On raising the cover, which has on the inside a colored picture of musical monks, is found the keyboard and blowing apparatus, consisting of one small bellows and a reservoir. Keys, ebony naturals, with black sharps. Beneath the keyboard and bellows are the stopped wooden pipes. Germany. The case antique; interior mechanism renewed. Maker unknown.

Length, 1 foot 1 inch. Width, 9 inches. Depth, $4\frac{1}{4}$ inches.

PLATE CVI



No. 2289

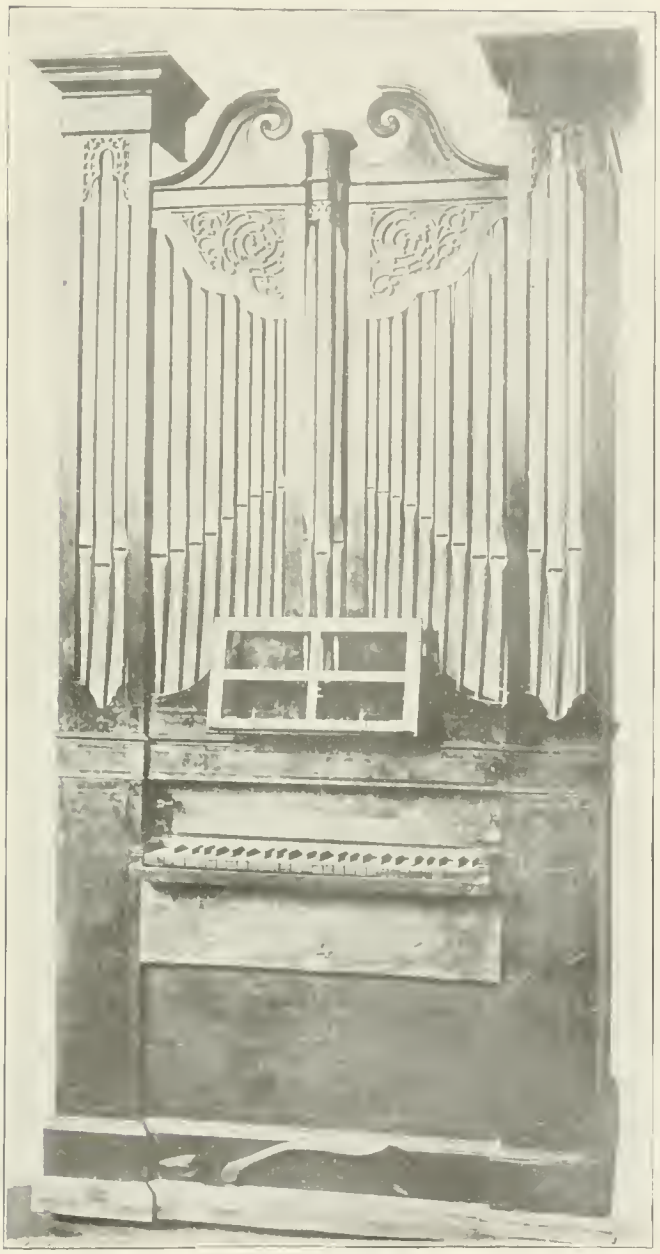
No. 1780

Gallery 26—Central Case

CHAMBER ORGAN. Compass, four octaves and four notes—C to E, lower C sharp wanting. Tall mahogany case, with ornamental pipe-front. Sheraton tracery and inlaid with black and white lines. The keyboard slides within the instrument when not in use, and on each side are placed two stops, admitting the air to the following registers: Stop Diapason Treble, Stop Diapason Bass, Principal and Super-Octave. The diapasons of wood, the other pipes metal. The organ is blown by a foot pedal placed below the keyboard, and on the left-hand side is one small composition pedal. England. 1779. Maker, Thos. Chapman, of London.

Height, 6 feet 8 inches. Width, 3 feet 11 inches.

PLATE CVII



No. 1780

No. 1780

Gallery 26—Central Case

CHAMBER ORGAN, same as Plate CVII. Second view, showing front with ornamental pipe-front removed.

PLATE CVIII

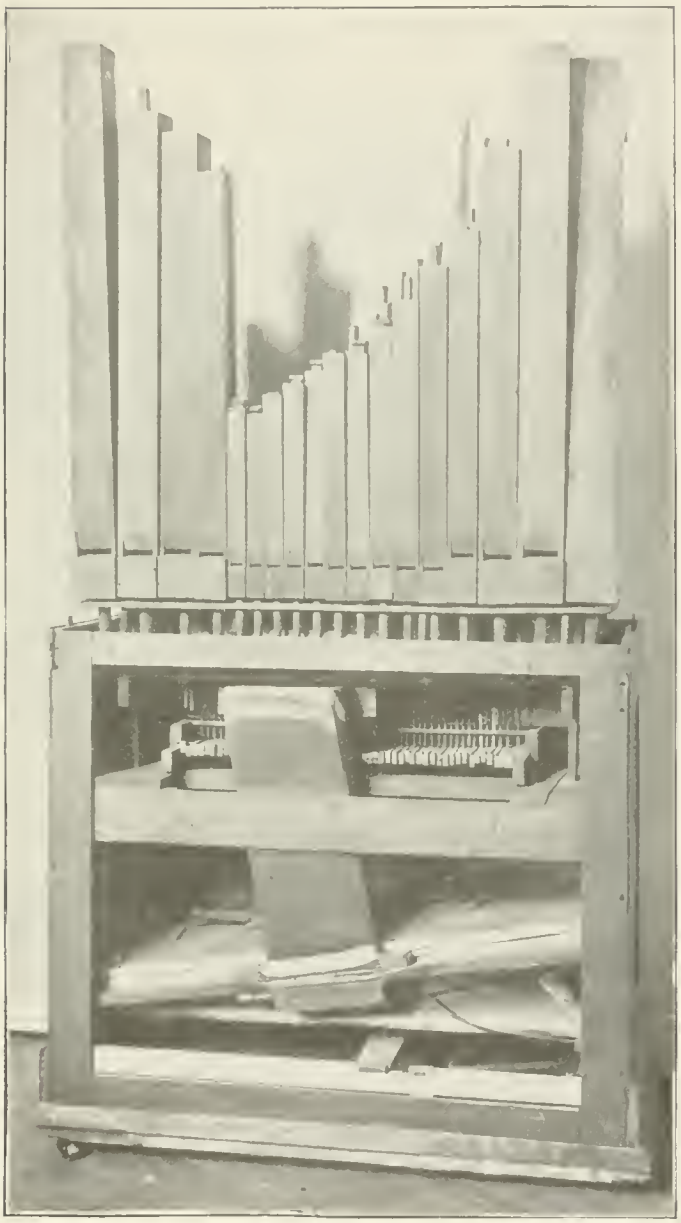
No. 1780

No. 1780

Gallery 26—Central Case

CHAMBER ORGAN, same as Plate CVII. Third view, with back panels removed, showing pipes and action.

PLATE CIX



No. 1780

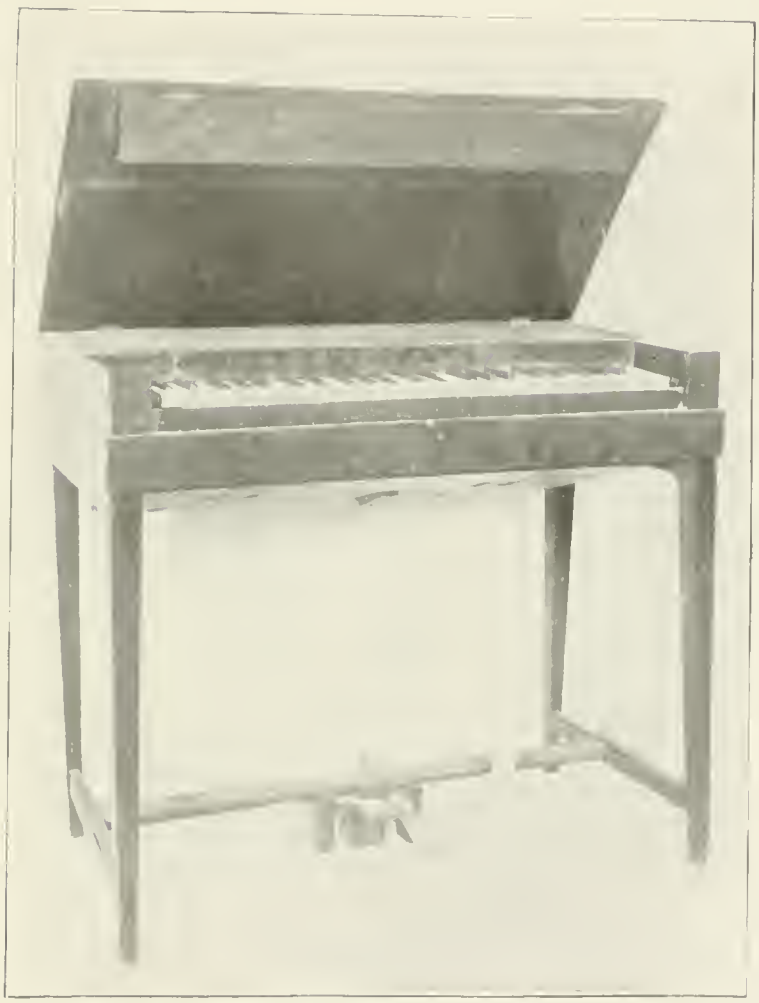
No. 1779

Gallery 26—Central Case

SERAPHINE. Compass, four octaves, from C to C. An oblong oak case, standing on four legs, which fold up when desired. Underneath are two small pedals, one moving a bellows placed beneath the instrument, and the other opening a small swell shutter beneath the case. Keys, ivory naturals, with black sharps. U. S. A. c. 1840. Maker unknown. The Seraphine was invented in 1833 and was the precursor of the Harmonium.

Length, 2 feet 7½ inches. Width, 2 feet 4 inches. Depth, 3 inches.

PLATE CX



No. 1779

No. 2496

Gallery 26—Central Case

MELODEON. Compass, three octaves and two notes—G to A. A small oblong mahogany case, supported on a black stand with three legs, furnished with two foot pedals, one attached to a small lever on the left-hand side of the instrument, working the bellows, the other a small swell shutter. Keys, ivory naturals, with black sharps. Germany. 19th Century. Maker unknown.

Length, 1 foot 8½ inches. Width, 7 inches. Depth, 6 inches.

PLATE CXI

No. 2496

Nos. 1522, 1195, 1200

Gallery 26—Central Case

1522. ROCKING MELODEON. Compass, three octaves—G to G. A small oblong case of walnut. At the bottom is placed the blowing apparatus, consisting of a pair of bellows. By pressing down the left-hand side of the instrument the bellows are filled, the lower ones being distended by a strong spring, and by maintaining a rocking motion a constant supply of wind is provided for the instrument. Keys, ivory naturals, with black sharps. A small button on the top of the instrument moves a swell shutter. U. S. A. Early 19th Century. Maker, Caleb Pacard, Bridgewater, Mass.

Length, 1 foot 8½ inches. Width, 10½ inches.

The Rocking Melodeon is sometimes called a "Teter."

1195. ROCKING MELODEON. Compass, three octaves—G to G. Similar to the preceding, but the case is more shallow and the construction suggests a little earlier date. Keys, ivory naturals with black sharps. A small pin on the top of the instrument moves a forte shutter. U. S. A. Early 19th Century. Maker unknown.

Length, 2 feet 3 inches. Width, 1 foot.

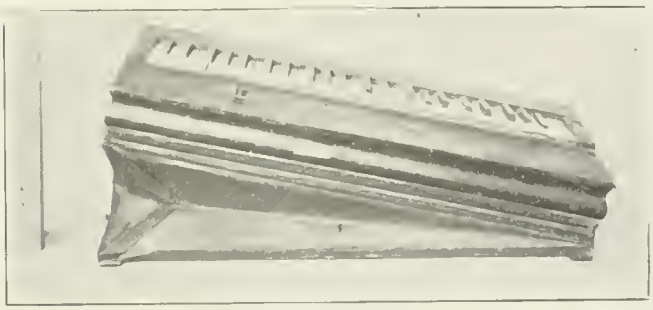
1200. HARMONIFLUTE. Compass, three octaves and five notes—C to F. An ebonized wooden case, with bellows at the back. France. Late 19th Century. Maker unknown.

Length, 1 foot 9½ inches. Width, 7 inches. Depth, 6 inches.

This instrument can be played on the lap, knee, or on a stand; if on a stand, the bellows are worked by a pedal. The Harmoniflute was first made in 1852 by Boulon, of Paris.

PLATE CXII

No. 1522



No. 1195

No. 1200

Nos. 1192, 2402

Gallery 26—Central Case

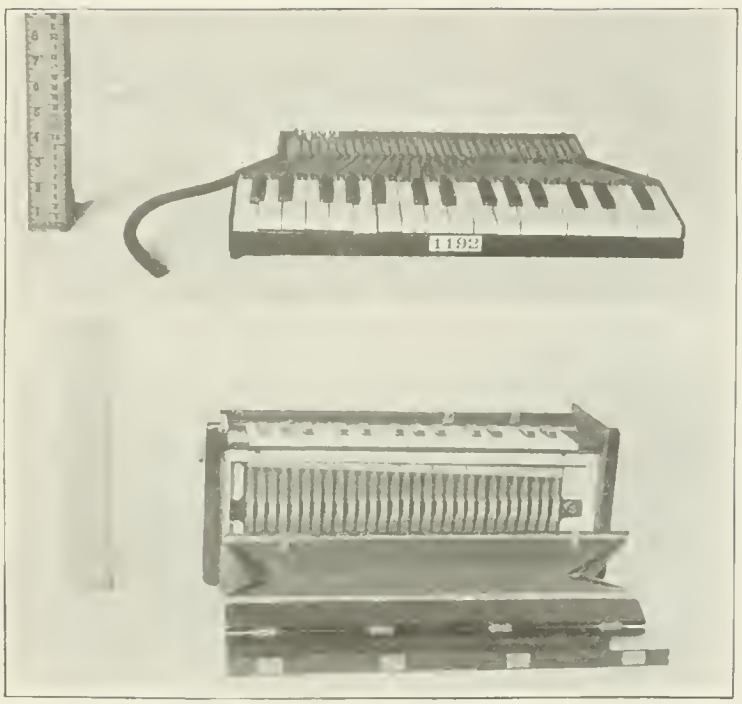
1192. HARMONIPHON. Compass, two octaves and seven notes—C to A. A small shallow case, containing a set of free reeds, which are placed at the back. On the left-hand side a brass nozzle, to which is attached a rubber tube. The wind supply is furnished from the mouth of the performer. France. 19th Century. Maker unknown.

Length, 1 foot 5 inches. Width, 9 inches.

2402. PORTABLE MELODEON. Compass, two octaves and four notes. Small narrow case of red mahogany. At the back a single bellows; in the front an air reservoir. Keys, white naturals, with black sharps. A double set of free reeds in unison. The instrument is contained in a small red mahogany case, furnished with a leather carrying strap. On opening the cover the keys are seen, occupying the length of the case; the back forms a bellows, the front an air reservoir. Beneath the keys are two rows of free reeds in unison. England. Late 19th Century. Maker unknown.

Length, 1 foot 3¼ inches. Width, 4½ inches. Depth, 6½ inches.

PLATE CXIII



Nos. 1192, 2402

No. 2741

Gallery 29—Central Case

CLAVI ORGANUM. Compass, four octaves—C to C; lower C sharp missing. The exterior of the case decorated with gilt figures in relief, probably Dutch work in Japanese style. This instrument was made by order of the Elector of Hanover, afterward George I. of England, for presentation to his regimental chaplain, who rendered the Elector an important service. The landscape on the interior of the cover represents Schulenberg Castle, the residence of the Elector. Keys, black naturals, with white sharps; the fronts and sides of the latter red; the black keys inlaid with metal in hollow dots. The nameboard inlaid with ebony and ivory. This instrument was originally a harpsichord and an organ of forty-eight pipes, the former having been transformed into a piano with an octave stop; the action is early English, the strings fastened to the hitch-pins by means of eyes. The soundboard bridge is furnished with two sets of pins to procure the bearings of the strings. The octave hammers are on wire shanks, the others on wood. The action-jack has no escapement. The hammer is hinged to the rail with a slip of parchment. The soundboard still keeps the rose. The vibrating length of the longest double string is 5 feet 6 inches; that of the longest octave string, 3 feet 6 inches; the vibrating length of the shortest double strings is 6 inches; that of the shortest octave string, 3 inches. The octave strings lie on their own bridge. The organ attachment has 48 wooden pipes, stopped diapason, 8 feet pitch. The valves are placed beneath the lower keyboard and are operated by sticker action, a loose jack topped by a wire screw with a padded button depressed by the key. The keyboards are controlled by two pairs of buttons. The lower keyboard plays the organ with or without the piano, the upper plays the octave attachment; but this may be "coupled" with the lower octave and organ by shifting the position of the keyboard. The name of the maker inlaid in metal, similar to the decoration on the keys, as follows: "Hermans Brock, Orgel und Instrument Macher zu Hanover, A. D. 1712."

Length, 7 feet 5½ inches. Height, 3 feet 7 inches.

This instrument was once owned by Carl Engel and belonged to his original collection.

PLATE CXIV

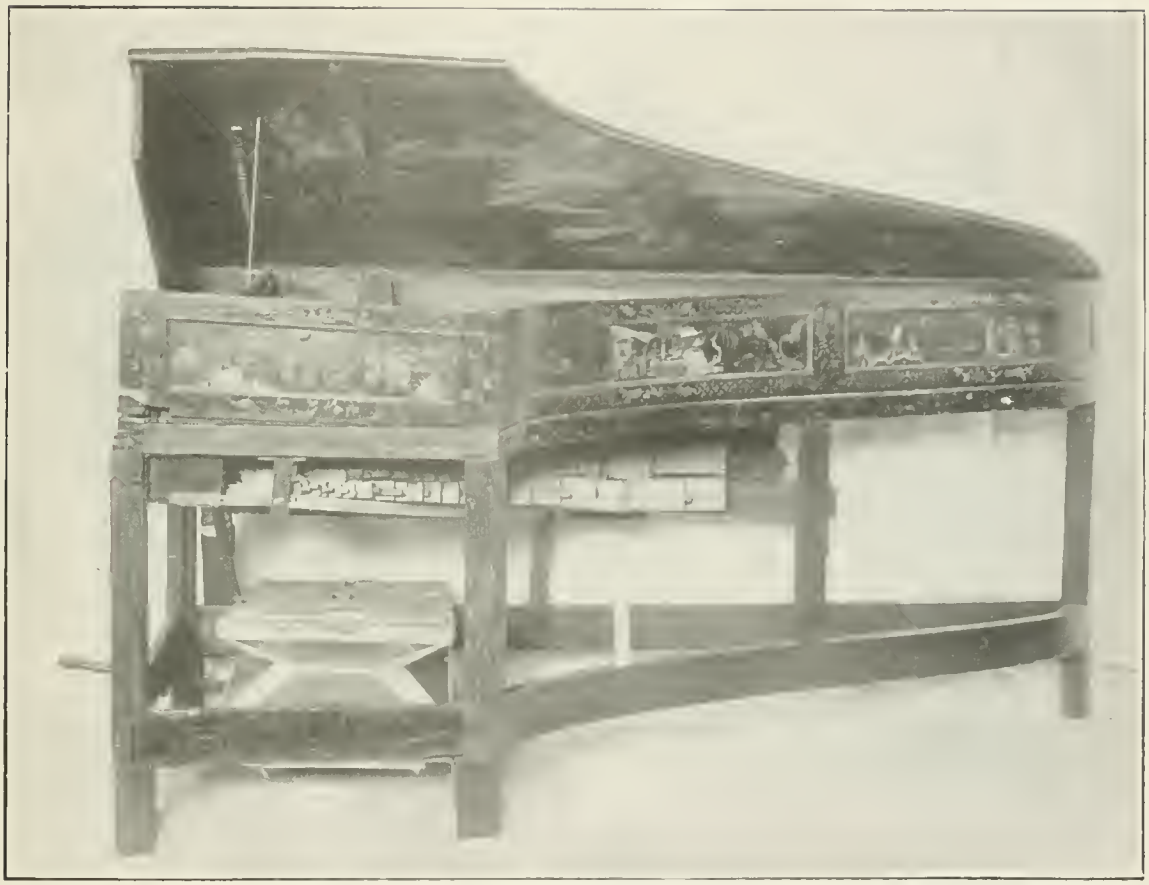
No. 2741

No. 2741

Gallery 29—Central Case

CLAVI ORGANUM, same as Plate CXIV. Second view, showing organ pipes.

PLATE CXV



No. 2741

No. 2803

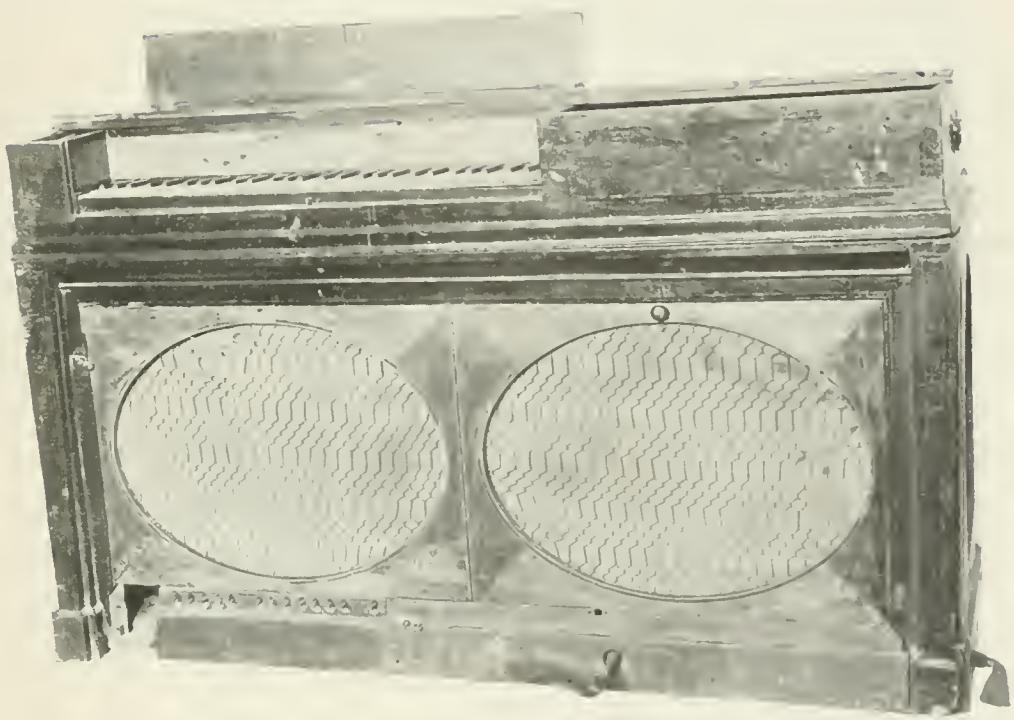
Gallery 29—Central Case

PIANO WITH PIPE ORGAN ATTACHMENT. Compass, five octaves—F to F. Mahogany case, in cabinet form, with lines of black and white inlay. Oval openings on the side panels, with ornamental wire net work backed with crimson cloth much discolored by age. Keys, ivory naturals, with black sharps. Double strung in the bass, the thirteen upper notes tri-cord, the remainder bi-cord. The dampers are divided into treble and bass sections, raised by two stops on the left-hand side of the case. A third stop operates a damper for silencing all the strings. The organ attachment extends from lower C to F—54 notes. Wooden pipes, 8 feet pitch, the lower 19 melodia or stopped diapason. A pedal on the right-hand side, also one in front, for blowing the organ. Marks in the lower part of the case indicate that a pedal attachment for thirteen bass notes at one time formed part of the instrument. This addition was evidently of rude workmanship and is now missing. Long sticker action connects the keyboard with the valves. The pipes are placed horizontally beneath the keyboard, the air reservoir placed at the side. On one of the organ pipes is a label inscribed as follows: "Made by Eaton Pet—— (?) in the year of our Lord, 1786." England. c. 1780. The piano bears the name of Longman & Broderip, musical instrument makers, 26 Cheapside and No. 13 Hay Market, London.

Length, 5 feet 6 inches. Height, 3 feet 1 inch. Depth, 1 foot 11 inches.

Messrs. Longman & Broderip were the predecessors of Clementi & Collard in Cheapside, and John Geibs, inventor of the "hopper" action, is said to have been in their employ.

PLATE CXVI



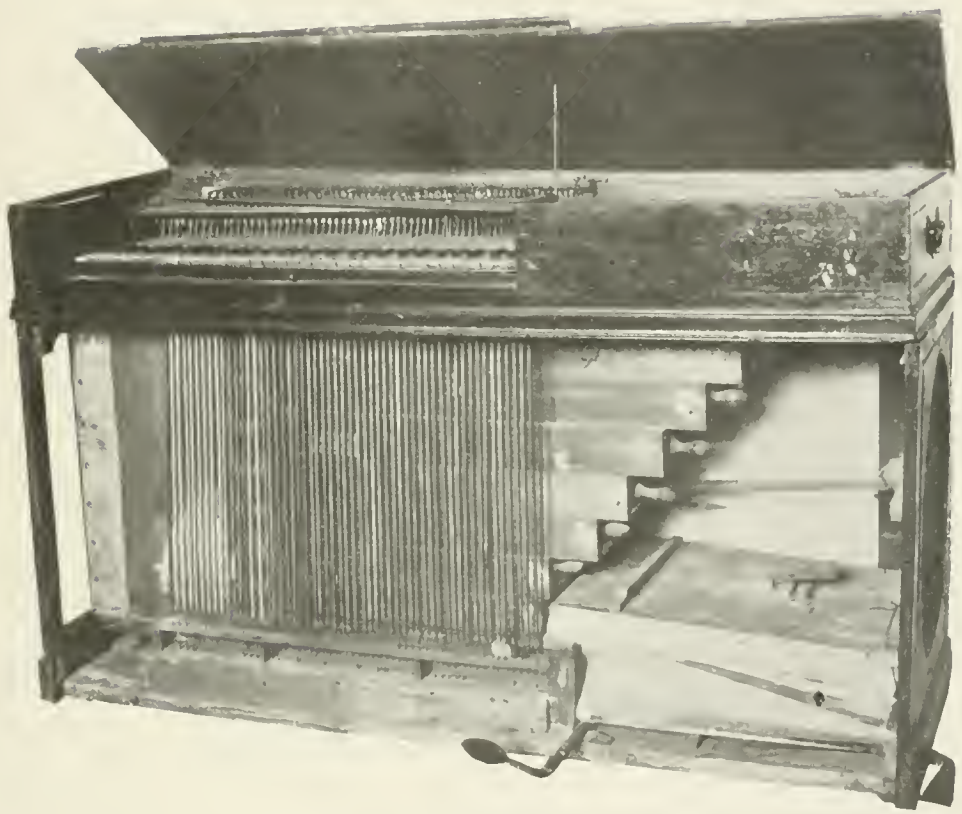
No. 2803

No. 2803

Gallery 29—Central Case

PIANO WITH PIPE ORGAN ATTACHMENT, same as Plate CXVI. Second view, front with panels removed, showing the sticker action and air reservoir.

PLATE CXVII



No. 2803

No. 2776

Gallery 29—Central Case

ORGANO PIANO. Compass, three octaves and a third—C to E. Rosewood case in cabinet form. Keys, ivory naturals, with black sharps. The most interesting point in the action is the key, which is padded at the back end and so heavily leaded as to stop the ventil perfectly when at rest. The piano action is simple. The soundboard carries a stout rim for the hitch-pins at least 3½ inches thick. Bi-cord in the treble. The bass strings rim into a metal shoe at the base. Regulating screws on a rail in front of the hammer-butts produce the escapement of the hammer after the stroke. There is no back-check to the hammer; the dampers, however, are controlled by two springs, one of which on the spring-rail presses the damper against the string. U. S. A. 19th Century. Maker unknown.

Height, 3 feet 8¼ inches. Width, 2 feet 1½ inches. Depth, 1 foot 8 inches.

PLATE CXVIII

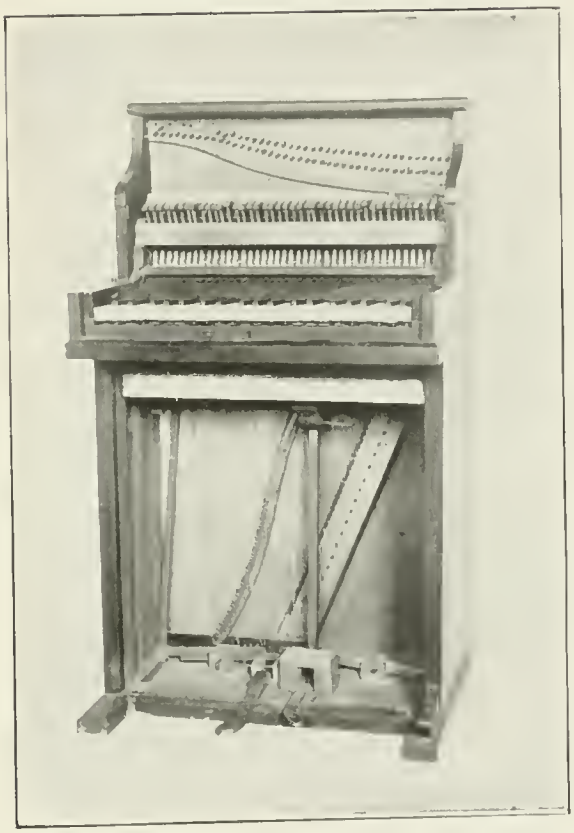
No. 2776

No. 2776

Gallery 29—Central Case

ORGANO PIANO, same as Plate CXVIII. Second view, front, with panels removed, showing action.

PLATE CXIX



No. 2776

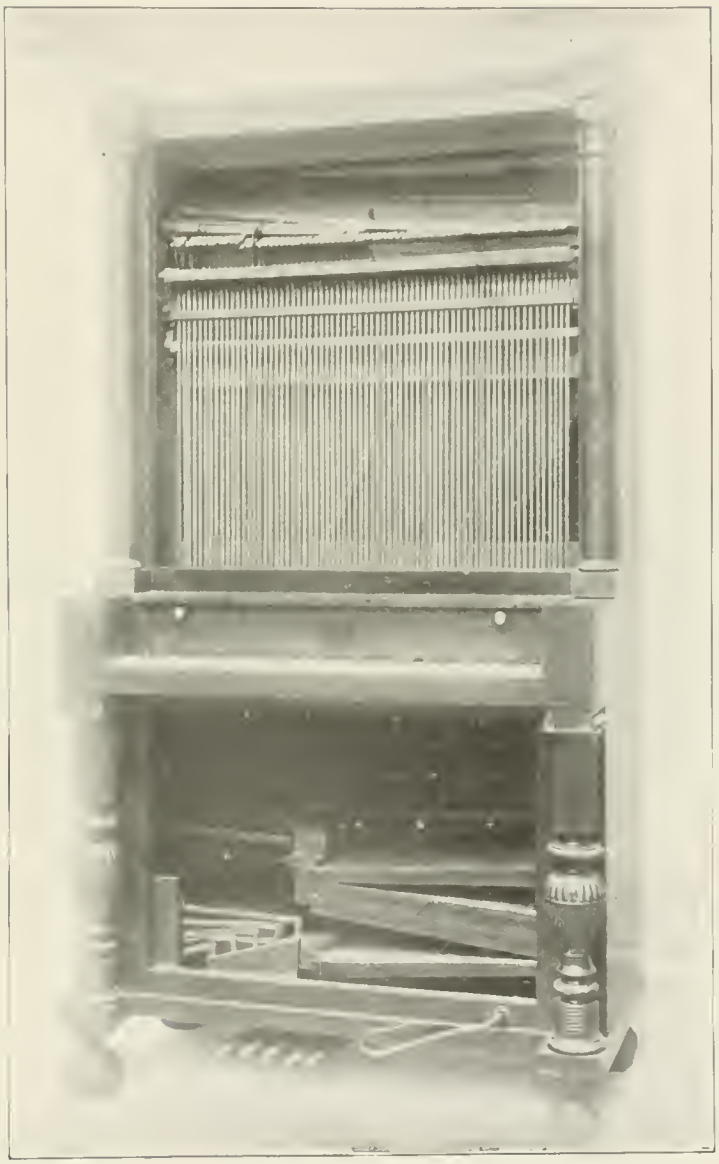
No. 2098

Gallery 26—Central Case

ORGANO PIANO. Compass, five octaves and eight notes—E to C. A tall, upright case of mahogany, standing on four claw-ball feet, with two turned pillars supporting the keyboard, and above, two ornamental pillars, painted green and gold. Keys, ivory naturals, with black sharps. Long sticker action. At the bottom of the case five brass pedals—Soft, Loud, Bassoon, Drum and Silent. The organ mechanism enclosed within the bottom of the case below the keyboard, consisting of two small bellows with air reservoir, painted red and gold, and worked by a foot pedal on the right-hand side, in front of the case. The sound is produced by reeds of the harmonium or free type. The organ part of the instrument seems to be a later addition. U. S. A. Early 19th Century. Maker unknown.

Height, 8 feet. Width, 3 feet 8½ inches. Depth, 1 foot 10 inches.

PLATE CXX



No. 2098

V

Keyboard Instruments With Sonorous Substances. Glassichord, Glockenspiel, Piano Harmonica, etc.

Corresponding to Class IV, Division II, of Handbook No. 13

No. 2854

Gallery 25—Central Case

GLASSICHORD. Compass, three octaves and one note. Small, square mahogany case resting on a pedestal. Keys white naturals and black sharps. The hammers strike small plates of glass arranged in a single row back of the keyboard. The works are protected by a silk screen. Austria. 1752. Maker, F. T. Leftel, Vienna.

Length, 2 feet 2½ inches. Width, 1 foot 7½ inches. Height, 2 feet 6½ inches.

PLATE CXXI

No. 2854

No. 2854

Gallery 25—Central Case

GLASSICHORD, same as Plate CXXI. Second view, with front-board removed, showing action.

PLATE CXXII

No. 2854

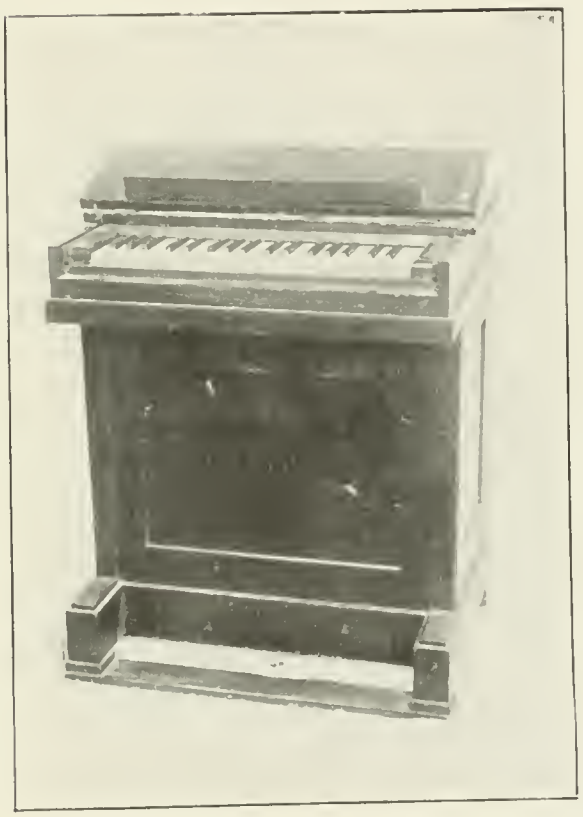
No. 2766

Gallery 25—Central Case

GLASSICHORD. Compass, three octaves—F to F. A plain case of stained wood in cabinet form. Keys, ivory naturals, with black sharps. The action consists of three tiers of glass, over each of which is a row of hammers, all working downward. Depressing a key pushes a wooden button some three inches from the front of the keyboard; this in turn acts upon a counter lever, attached to an abstract, into the lower end of which is screwed what answers to a vertical jack. The hammer-butt passes through a groove in this jack, and at its right is a regulating button, which was once united by a thread to a straight spring above. The hammer, which is pivoted in this groove, is further brought back to position by a spiral spring attachment. This spring is placed beneath the projecting end of the hammer-butt and connected with it by a bit of skin, into which it is hooked. The hammer-butt is jerked up (and the hammer down) by the abstract and restored to place by the two springs. The pressure is downward on the hammer-head against the resistance of the springs. 19th Century. Maker unknown.

Height, 2 feet 7½ inches. Width, 2 feet 2½ inches. Depth, 1 foot 10 inches.

PLATE CXXIII



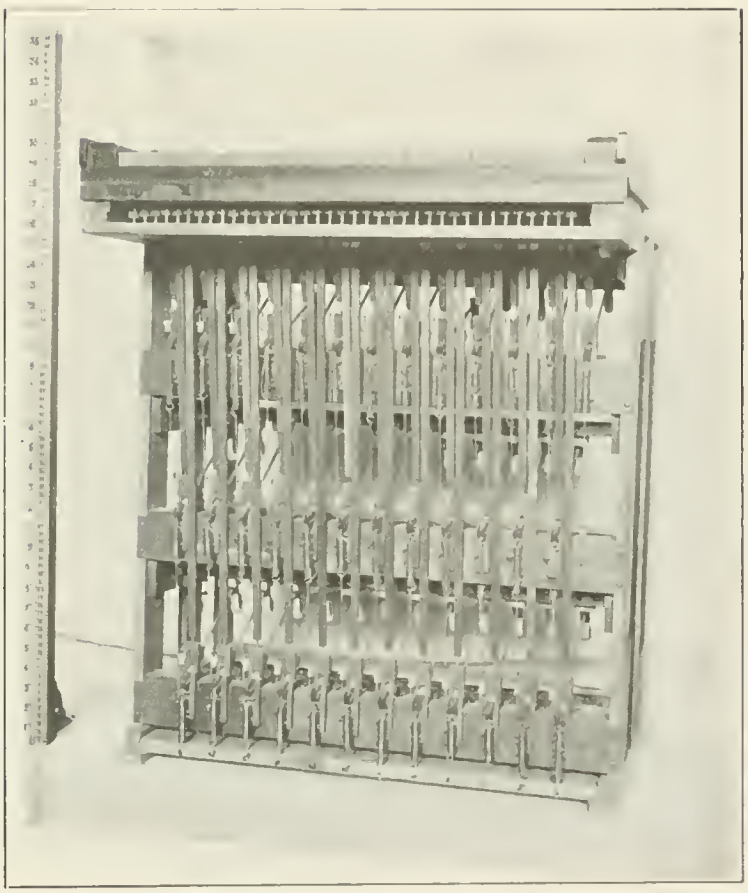
No. 2766

No. 2766

Gallery 25—Central Case

GLASSICHORD, same as Plate CXXIII. Second view, enlarged, showing action beneath the keyboard.

PLATE CXXIV



No. 2766

No. 2766

Gallery 25—Central Case

GLASSICHORD, same as Plate CXXIII. Third view, enlarged, showing the tiers of glass with hammers in position.

PLATE CXXV

No. 2766

Nos. 1210, 1202

Gallery 25—Central Case

1210. GLOCKENSPIEL. Compass, two octaves—C to C. A small square walnut case containing twenty-five hemispherical gongs which, on pressing the keys, are struck by little hammers. Keys, white naturals, with black sharps. Europe. 19th Century. Maker unknown.

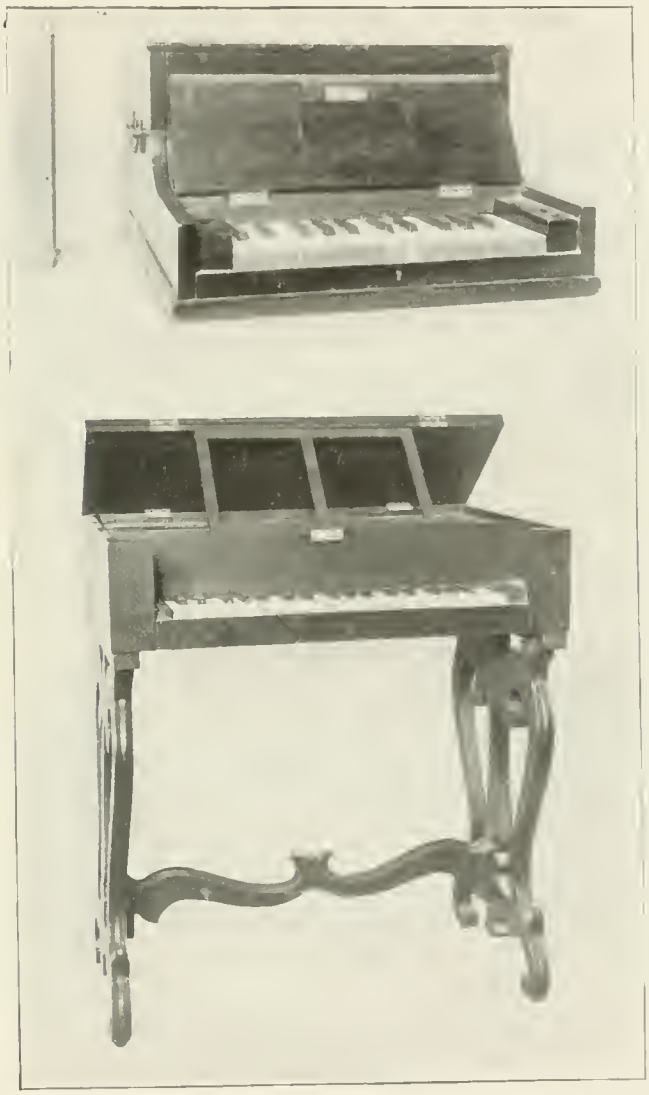
Length, 1 foot 7½ inches. Width, 1 foot 6 inches. Depth, 10½ inches.

Drexel Collection.

1202. GLASSICHORD. Compass, three octaves—C to C. A small square walnut case resting on a fancy stand. Keys, white naturals, with black sharps. The hammers strike small plates of glass arranged in two rows. U. S. A. 19th Century. Maker unknown.

Length, 2 feet 3 inches. Width, 1 foot 7½ inches. Depth, 8 inches.

PLATE CXXVI



Nos. 1210 (upper), **1202** (lower)

No. 1201

Gallery 25—Central Case

PIANO HARMONICA. Two views: figure 1, case open, showing action; figure 2, case closed over action. Compass, five octaves, A to A. An oblong walnut case. The hammers strike on metal tongues similar to those used in a musical box. Keys, ivory naturals, with black sharps. England. Late 19th Century. Makers, B. Cramer & Co.

Length, 3 feet. Width, 1 foot 6 inches. Depth, 9 inches.

PLATE CXXVII

1

2

No. 1201

VI

Musical Accessories

LIST OF ACTIONS

The following Models, with the exception of Nos. 1924 and 3107 to 3110 inclusive, are placed with the instruments embodying the action which they illustrate.

Keyboard Stringed Instruments, Plucked.

1925. MODEL OF SPINET OR VIRGINAL ACTION. The key-rail carrying a jack fitted with a quill or leather plectrum, which, when the key is depressed, rises and plucks the string in passing. For example employing this mechanism see No. 1209, Plates VIII, IX.

1928. MODEL OF HARPSICHORD ACTION. The same mechanism as that of the spinet. For example see No. 1220, Plates XXIII, XXIV.

2401. MODEL OF CLAVICYTHERIUM OR UPRIGHT HARPSICHORD ACTION. The same mechanism as that of the spinet or harpsichord, arranged for an upright model. For example see No. 1224, Plates XLI, XLII.

Keyboard Stringed Instruments, Struck.

1926. MODEL OF CLAVICHORD ACTION. The string struck by an upright metal tangent inserted in the key-rail. For example employing this mechanism see No. 1207, Plate XLIX.

3107. MODEL OF CRISTOFORI PIANO ACTION, 1720. This model illustrates the action of the Cristofori Piano No. 1219, Plates L, LI.

1927. MODEL OF PIANO ACTION. Primitive Viennese Method. For example employing this mechanism see No. 1197, Plates LV, LVI.

1923. MODEL OF PIANO ACTION. Viennese Method. For example employing this mechanism see No. 1213, Plate LX.

3108. MODEL OF STEINWAY PIANO ACTION, showing three-quarter iron plate with wooden wrestplank. Mrs. Brown is indebted to the kindness and courtesy of Messrs. Steinway & Sons for the complete set of models showing the development of their pianoforte, i. e., Nos. 3108-3113, 1924.

3109. MODEL OF STEINWAY PIANO ACTION, showing full iron plate covering wrestplank.

3110. MODEL OF STEINWAY PIANO ACTION, showing modern full iron plate with Capo d'Astro bar.

3111. MODEL OF STEINWAY GRAND CASE, showing old construction of rim and old method of bracing.

3112. MODEL OF STEINWAY GRAND CASE, showing modern bent rim, modern method of bracing and iron shoe connecting same with plate.

3113. MODEL OF STEINWAY SOUNDING BOARD, showing bridge and bass bridge.

3114. MODEL OF STEINWAY SOUNDING BOARD, showing ribbing.

1924. MODEL OF REPETITION PIANO ACTION. Steinway Grand.

3115. MODEL OF CHICKERING PIANO ACTION, showing overstrung frame for square piano. Mrs. Brown is indebted to the kindness and courtesy of Messrs. Chickering & Sons for this and the following model, No. 3116.

3116. MODEL OF CHICKERING PIANO ACTION, showing the Chickering system of wooden bracing for grand pianos.

Keyboard Wind Instruments.

1922. ENLARGED MODEL OF FREE REED, showing vibrating metal tongue. Presented by Messrs. Mason & Hamlin, Boston.

Appendices

I. Models Illustrating the Action of the Different Types of Keyboard Stringed Instruments

II. Documents Relating to the Cristofori Piano

APPENDIX I

MODELS OF ACTION

KEYBOARD STRINGED INSTRUMENTS, PLUCKED

PLATE CXXVIII

THE SPINET OR VIRGINAL

In the Spinet or Virginal there is but one string to a note, which is sounded by means of a plectrum fitted into a jack resting on the key-end. When the key is depressed the jack is forced through an opening in the jack-rail, and the plectrum—a bit of crow-quill or leather fitted into a movable tongue—plucks the string in passing. When the key is allowed to rise, a spring at the back of the movable tongue enables the jack to return to position without vibrating the string, which is immediately muted by a cloth damper placed on one side of the plectrum. A strip of wood, placed in the end of the key and working in a groove, keeps it in position.

1. Spinet or Virginal Action. Front of jack showing plectrum (a), movable tongue (b), and damper (c) in position.

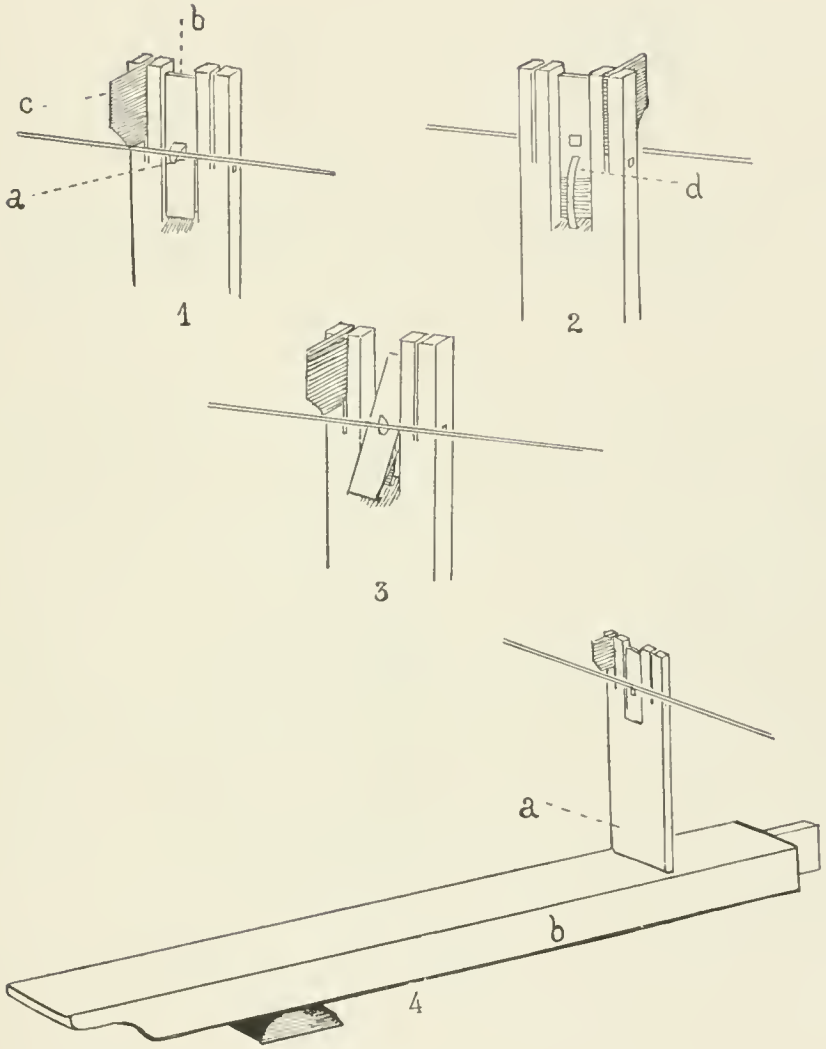
2. Back of jack showing spring (d) which, as the jack returns to position, allows the plectrum to pass the string without vibration.

3. Showing action of the movable tongue and plectrum as the jack is returning to position after the note has been sounded.

4. Jack (a), in position, resting on balanced key (b).

See Model of Action No. 1925. For example illustrating this principle see No. 1209, Plates VIII, IX, pages 29, 31.

PLATE CXXVIII



MODELS OF ACTION

KEYBOARD STRINGED INSTRUMENTS, PLUCKED.—(CONTINUED.)

PLATE CXXIX

THE HARPSICHORD

The action of the Harpsichord is identical with that of the Spinet or Virginal, except that the latter has but one string to a note, while the Harpsichord has two, three, and sometimes more strings to one note, thereby producing greater volume and variety of tone.

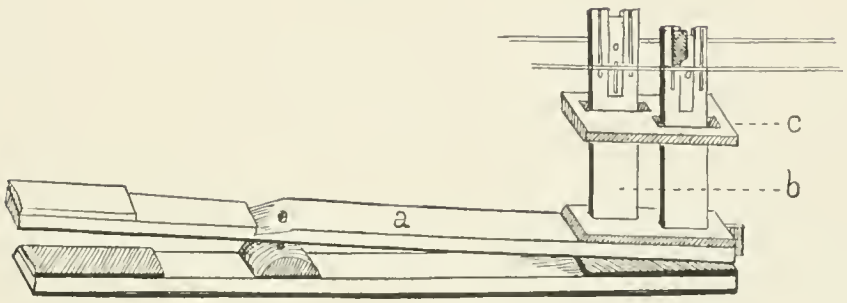
1. HARPSICHORD ACTION. Key (a) supporting jacks (b), which pass through key-rail (c).

See Model of Action No. 1928. For example illustrating this principle see No. 1220, Plates XXIII, XXIV, pages 67, 69.

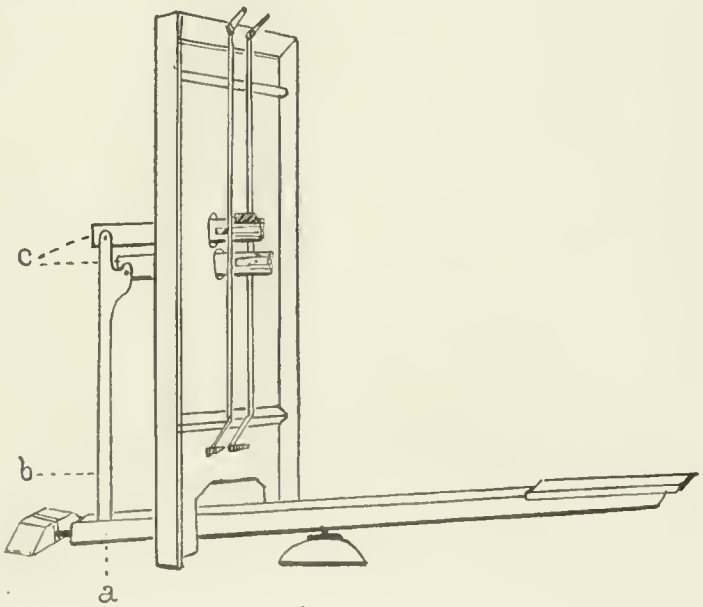
2. CLAVICYTHERIUM OR UPRIGHT HARPSICHORD ACTION. Into the back end of the key (a) is fixed an upright rod (b) to which the jacks (c) are fastened vertically. When the key is depressed the jacks move forward through the jack-rail and pluck the strings as the key rises and the jack returns to position.

See Model of Action No. 2401. For example illustrating this principle see No. 1224, Plates XLI, XLII, pages 103, 105.

PLATE CXXIX



1



2

MODELS OF ACTION

KEYBOARD STRINGED INSTRUMENTS, STRUCK

PLATE CXXX

THE CLAVICHORD

In the Clavichord the note is produced by means of a tangent, a slender upright of wood or metal fastened to the key. When the key is depressed the tangent rises and strikes its strings, a pair in unison (in rare instances a single string) and being held there, divides them into two vibrating parts. The longer part sounds the note, the shorter is muted by a strip of cloth interwoven among the strings. In the earlier clavichords there were often more keys than strings, one pair of unisons being struck by several tangents at different points sounding three or more notes. To produce several notes from one string it is only necessary to vary its vibrating length; when shortened it produces tones of a higher pitch and vice versa. Thus a tangent striking a string at a given point may sound C and a second tangent striking it a trifle nearer the bridge a note a semi-tone higher; while a third tangent striking the same string at a point still nearer the bridge may sound a note an octave higher, more or less as may be desired. This principle of several tangents striking one string being suggestive of a monochord, from which instrument the clavichord developed, gave rise to the term "gebunden" or "fretted." About the year 1720 the "bundfrei" or "unfretted" clavichord was introduced by Daniel Faber of Crailsheim, Saxony, in which each tangent has its own pair of unison strings.

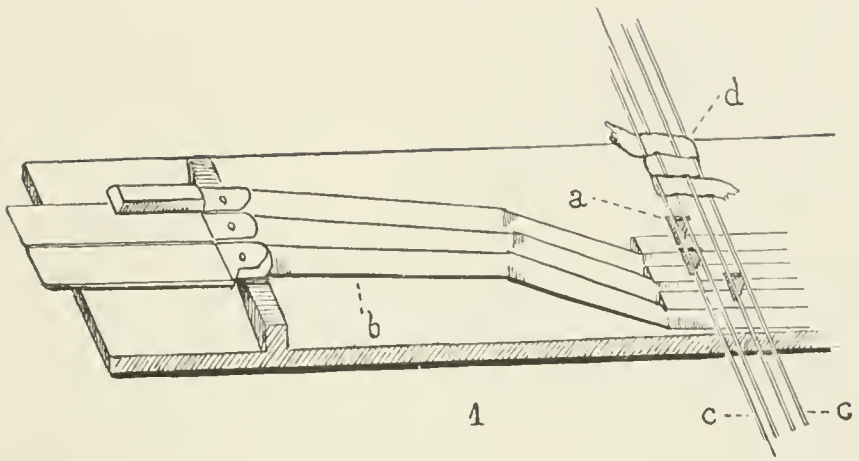
1. CLAVICHORD ACTION—"*Gebunden*" wherein two or more tangents strike the same pair of unison strings. Tangent (a) fastened to key (b) striking strings (c), damper (d).

See Model of Action No. 1926. For example illustrating the "*gebunden*" or "fretted" principle, i. e., where there are more keys than strings, see No. 1215, Plates XLVII, XLVIII, pages 117, 119.

2. CLAVICHORD ACTION—"*Bundfrei*" wherein each key tangent has its own pair of unison strings.

The "*bundfrei*" or "fret-free" principle is illustrated by No. 1207, Plate XLIX, page 121.

PLATE CXXX



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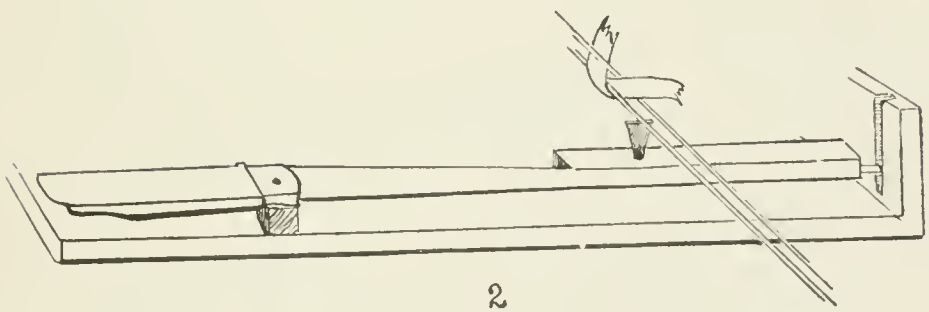


2

THE METROPOLITAN MUSEUM OF ART

MODELS OF ACTION

KEYBOARD STRINGED INSTRUMENTS, STRUCK.—(CONTINUED.)

PLATE CXXXI

THE PIANO

In the harpsichord and the clavichord we find the key supporting in the former a "jack" carrying a quill or plectrum, in the latter a "tangent," each of which, when the key is depressed, is brought into direct contact with the string; the one producing the note by "plucking" and the other by "striking" the string. About the year 1709, however, Bartolommeo Cristofori, the Paduan harpsichord maker, introduced an action in which the quill or plectrum and the tangent were supplanted by a hammer; this, when the key was depressed, was brought into contact with a small lever which in turn raised a second lever, and the principle here introduced still forms the basis on which the actions of all modern pianos are built. There are two pianos by Cristofori, known to be authentic, still extant (Grove's Dictionary, Vol. II., p. 711, also Hipkins' "History of the Pianoforte," p. 97); the earlier, dated 1720, forms a part of this collection (No. 1219, Plates L, LI.), the later, dated 1726, is in the Kraus Collection at Florence, Italy.

1. THE CRISTOFORI ACTION. c. 1709. This diagram shows the action as first introduced. The "jack" (which in the harpsichord carries the movable tongue and plectrum) here appears in a modified form and receives the name of "hopper," because, as it acts upon the hammer-butt, it "hops" forward and back. The action is as follows:

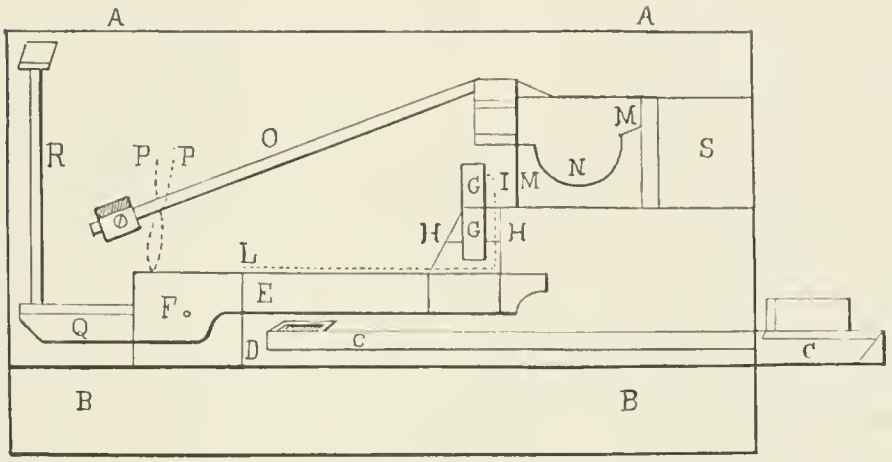
"a-a, the string; b, key bottom; c, key; d, cushion on key; e, upper lever; f, center-pin of upper lever; q, end of lever, bearing (under) damper on r, standard; p, p, crossed threads forming hammer-rest; o, hammer; l, i, regulating springs of g, g, hopper, strung on wire h, h; m, hammer-bar, in which turns hammer-butt n."—"A Noble Art," Fanny Morris Smith, p. 19.

2. THE CRISTOFORI ACTION, 1720. The diagram shows the action of the earlier of the two specimens, the original wooden hammers having been replaced by those of modern shape. Mr. Hipkins, in his "History of the Pianoforte," p. 98, describes this action as follows:

"a, is the key; b, the hopper (*linguetta mobile*—movable tongue, Cristofori called it), c, the notch for the hopper beneath an under-hammer or escapement lever, lettered k. This lever, covered with leather upon the end, is to raise the hammer-butt, d. The hammer-head is e. The spring i, regulating the play of the hopper or distance between it and the string, is regulated by a small hopper-check, h. The hammer-check is f, the damper g. The damper-stop j."

See Model of Action, No. 3107.

PLATE CXXXI



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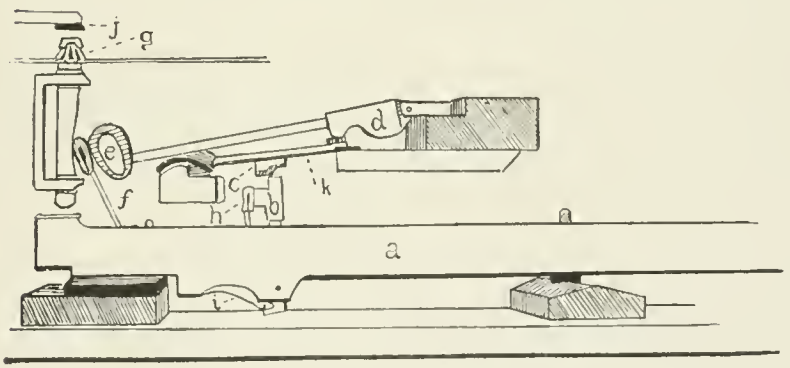


2

MODELS OF ACTION

KEYBOARD STRINGED INSTRUMENTS, STRUCK.—(CONTINUED.)

PLATE CXXXII

THE PIANO

3. THE ZUMPE ACTION. 1760-65. The invention of Johannes Zumpe, a German in the employ of Shudi, the harpsichord maker. Zumpe was the first to construct a square piano, the earliest specimen of his work on record being dated 1766. Grove's description of the Zumpe action, Dictionary, Vol. II, p. 715, is as follows:

"In the key c, is fixed the jack g, a wire with a leather stud on the top, known by the workmen as the 'old man's head.' This raises the hammer o; the damper, r, is lifted by a whalebone jack, v, called the 'mopstick,' placed near the end of the key, and is brought back to its place by the whalebone spring, w; a third piece of whalebone, x, projecting from the end of the key, works in a groove, and serves exactly as in the clavichord, to keep the key steady, there being no front key-pin. The two balance-rail key-pins shown in the drawing belong to two keys, the natural and sharp, and indicate the different balancing desiderated in all keyboards by the different lengths of the natural and sharp keys. The dampers were divided into treble and bass sections, raised bodily by two drawstops when not required, there being as yet no pedal."

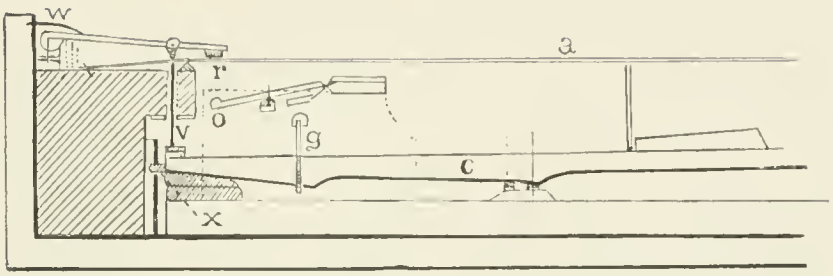
For example illustrating this principle see No. 2965, Plate LII, page 127.

4. THE ENGLISH ACTION (EARLY BROADWOOD), 1777. This improvement on the Cristofori action was made by Americus Backers, a Dutchman, and perfected by John Broadwood and his apprentice Robert Stodart; the principal feature of the improvement was the introduction of the regulating button and screw which insured direct action.

5. THE BROADWOOD GRAND ACTION. 1880.

From Grove's Dictionary, Vol. II, p. 716, we quote the following reference to these actions: "The difference in the two cases are in the proportions and form of the parts; the principle is the same in both, the only addition in the present action—and that not essential—being a strip of felt beneath the butt of the hammer, to assist the promptness of the checking. The differences of both from that of Cristofori are evident and important. The second lever or under hammer is done away with, and the jack, g, now acts directly in a notch of the butt, n. The regulating button and screw controlling the escapement are at gg. Simplicity and security are combined."

PLATE CXXXII



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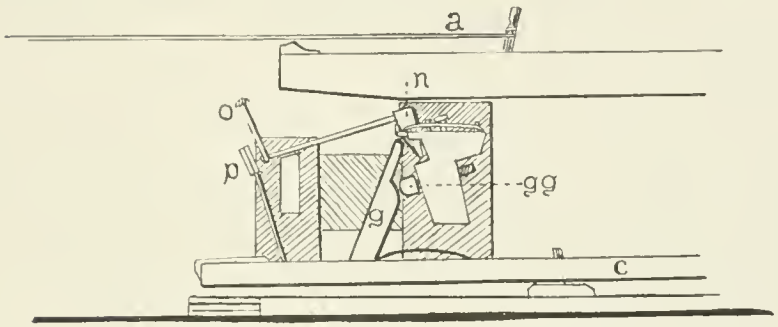

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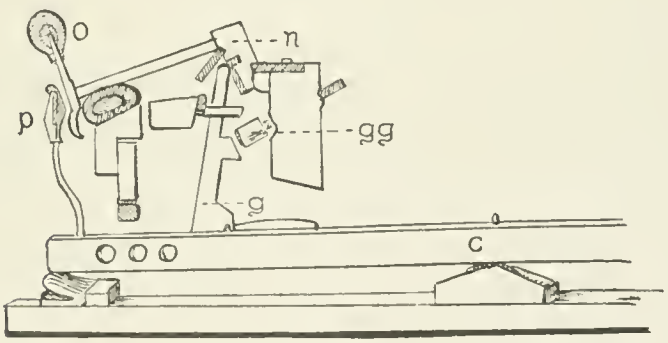


5

MODELS OF ACTION

KEYBOARD STRINGED INSTRUMENTS, STRUCK.—(CONTINUED.)

PLATE CXXXIII

THE PIANO

6. PRIMITIVE VIENNESE ACTION, without escapement. Drawing from Model of Action of No. 1197, Plates LV, LVI. This action is similar to that found in many German pianos prior to the introduction of Stein's escapement in 1777, and may be the invention of Christian Ernst Frederici of Gera, Saxony, although there is some doubt on this point.—History of the Pianoforte, p. 105.

By the depression of the key (c), the hammer-butt (d) is raised until it comes in contact with a rail (g) at the back of the keyboard, which results in jerking the hammer (o) to the string (a). When the key rises the string is muted by damper (r). The pedal attachment (m-m) in this model is of crude workmanship and apparently formed no part of the instrument as originally constructed.

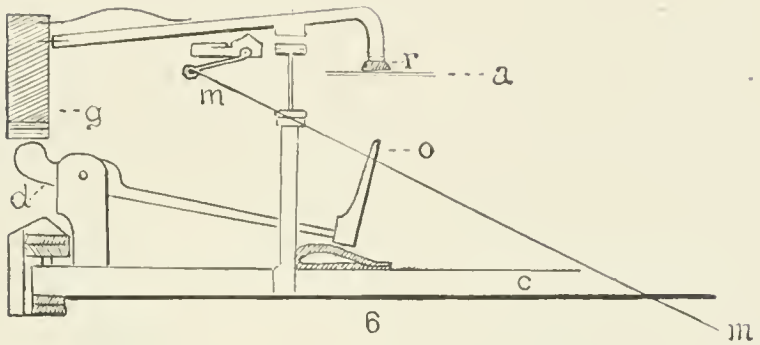
7. PRIMITIVE ESCAPEMENT. 1777-1780. Johann Andreas Stein of Augsburg. Key (c); *ausloser* or hopper (g); hammer (o).

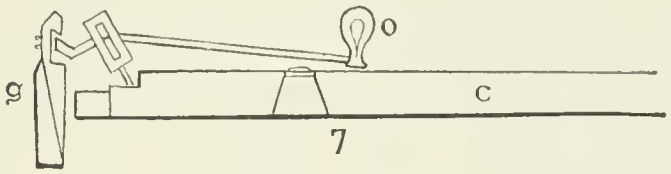
8. IMPROVED VIENNESE ACTION. c. 1802. Andreas Streicher and Nannette Stein. Key (c); hopper (g) hammer (o); hammer-check (p); damper (r).

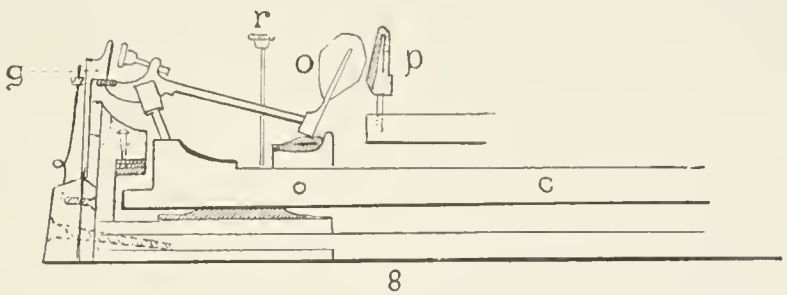
From Grove's Dictionary (Vol. II, p. 717) we quote the following reference to these actions (Figs. 7-8). "It will be observed that this escapement (Fig. 7) differs from Cristofori's and the English Action in the fact that the axis of the hammer changes its position with the rising of the key, the hopper —*ausloser*—(g) becoming a fixture at the back of the key. From this difference a radical change of touch took place and an extreme lightness became the characteristic of the Viennese action as developed by Andreas Streicher." (Fig. 8.)

For example illustrating the improved Viennese Action see No. 1213, Plate LX, page 143.

PLATE CXXXIII







MODELS OF ACTION

KEYBOARD STRINGED INSTRUMENTS, STRUCK.—(CONTINUED.)

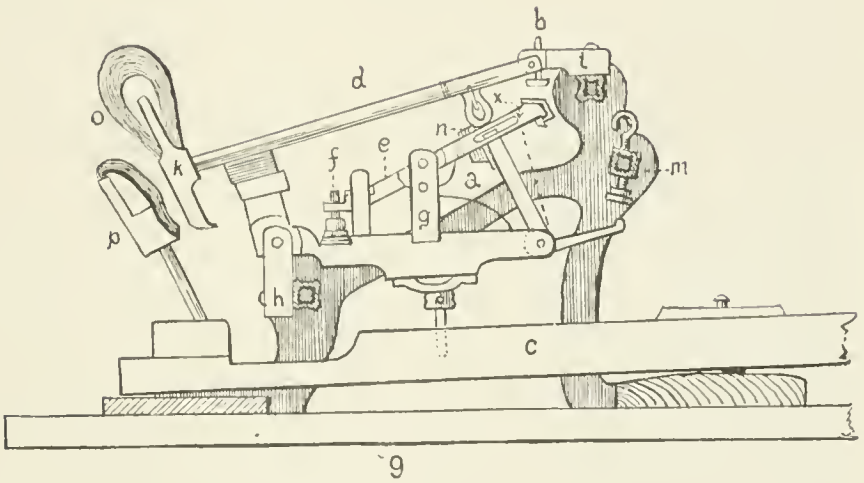
PLATE CXXXIV

THE PIANO

9. REPETITION ACTION, STEINWAY GRAND PIANO. In the Steinway Grand we have the piano action in its latest stage of development, the wooden frame having been superseded by one of metal, a system of compound levers developed to its highest point of lightness and velocity, the brilliance of tone assured by rapidity of action.

The key (c) carries the jack (a) which works in a slot (x) in the balancier (e). The balancier flange (g); motive flange (h); hammer flange (i); regulating button for balancier (f) hammer shank (d); regulating button of hammer shank (b); escapement button (m); hammer head (o); tail of hammer (k); back check (p); jack cushion (n).

PLATE CXXXIV



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APPENDIX II

DOCUMENTS RELATING TO THE CRISTOFORI PIANO

The following documents have interest as bearing on the authenticity of the Cristofori Piano. The first is a statement by Signor Diego Martelli, the last owner, from whom the instrument was purchased; the second is a permit granted his mother by the National Museum of Florence to visit her piano during the time when it was temporarily on exhibition; the third is an affidavit of Giorgio Ceccherini, an expert in musical instruments, by whom the piano was examined prior to its transfer.

I.

Statement of Signor Diego Martelli concerning the Cristofori Piano:

"Florence, Italy, Nov. 23d, 1895.

"This piano was bought by my maternal grandfather, Dr. Fabio Mocenni, years ago, when my mother was about five years old. My mother was born in 1814, and her father must have acquired the piano between 1819 and 1820. It remained always in my grandfather's house until his daughter married my father (the Engineer, Charles Martelli). Then she brought that piano into my family and always preserved it, not because of its great value, as she knew nothing of it until very lately, but in memory of her dead father, and because on that piano, when still a child, she learned the first rudiments of music. My mother, by family tradition, knew that this piano had been purchased by her father at a public sale which took place in the Grand Ducal Palace, in Siena, by order of the Minister of the Household, of all such things as he considered as worthless and of no use. The discovery that this piano is very valuable was as follows:

"For the sake of economy during the time that Florence was the Capital of Italy, we rented the first floor of our house, No. 3 Via del Melarancio, and occupied the second floor. In 1872, Signora Martelli (my mother) again changed her apartments from the second to the first floor, and at the moment the transfer of our furniture was taking place from one floor to the other, Prof. Cosimo Conti, a scholar and an intimate friend of ours, came to visit us. The professor was in close correspondence with Cavaliere L. Puliti, who was spending a great deal of his time in trying to discover the origin of the piano, and discovered on it, to his great surprise, an inscription which

attested that it had been made by Bartolomeo de Cristoforis. He immediately informed his friend, Cavaliere L. Puliti, of this fact, and he came at once to examine it. Then it was ascertained that it was one of the rarest and most valuable pianos in existence. We at once sent for a tuner and had it put in good condition, and the most distinguished pianists of Italy have since played on it.

" Cavaliere L. Puliti published a book on the life of Ferdinando de Medici, Grand Duke of Tuscany, and in it he treated of the origin of the piano. In this learned book, at page 31, he mentions the piano in possession of my mother (Signora Martelli), which is now your property.

" In 1876, Signor Cesare Ponsicchi published a work entitled 'The Piano: Its Origin and Evolution.' In his monograph, Signor Pongicchi, at pages 26 and 27, speaks at length of this piano and illustrates it at the end of the volume.

" I believe that the above information will satisfy your legitimate curiosity, and by indicating to you the above published works to which you may refer for more detailed information, I have complied with your wishes in the matter.

" I remain, very truly,

(Signed) " DIEGO MARTELLI,

" Only son and heir of Ernesta Mocenni, Widow Martelli."

The two books referred to in the above account, " The Life of Ferdinando de Medici, Grand Duke of Tuscany," by Cavaliere L. Puliti, and " The Piano: Its Origin and Evolution," by Cesare Pongicchi, are now out of print, and it is impossible to obtain them. Through the courtesy of Signor Martelli, the Museum was enabled to purchase his own copies, and these, together with the cofra in which he kept them, are now in the library.

II.

Translation of permit to visit the National Museum of Florence at any time, granted to Signora Martelli, who loaned her Cristofori Pianoforte to the Museum:

" National Museum of Florence,

" Florence, Sept. 9th, 1883.

" The noble lady Ernesta Martelli, being the owner of the old Pianoforte De Cristoforis, loaned by her to the National Museum of Florence, is granted permission to enter the museum at any time she may wish to see the condition of her Pianoforte.

(Signed) " The Director,

" C. DONATI."

III.

Copy of affidavit of Giorgio Ceccherini regarding his examination, etc., of the Cristofori Pianoforte:

" Kingdom of Italy, }
" City of Florence, } ss.

" I, Giorgio Ceccherini, of the firm of G. & C. Ceccherini, dealers in pianos and musical instruments, successors to Messrs. Dussi, established in the year eighteen hundred and thirty-four, in the City of Florence, Kingdom of Italy, examined, in the months of May and June, eighteen hundred and ninety-five, at various times, an ancient piano, the original production of the late 'Cristofori,' the best manufacturer of pianos in the early part of the eighteenth century, said Cristofori having been the inventor of pianos.

" I do solemnly, sincerely and truly declare that I am an expert in the line of musical instruments, and that the aforementioned piano commands a price of a rare piece of antiquity, and as such was sold to Mrs. John Crosby Brown, of New York, United States of America. I do finally, solemnly, sincerely and truly declare to the best of my knowledge and recollection, that the piano aforesaid was bought for presentation to a Museum in New York.

" Florence, January 17th, A. D. 1896.

(Signed) " GIORGIO CECCHERINI. [L.S.] "

" [L.S.] Subscribed and sworn to this 17th day of January, 1896, before me,

(Signed) " C. BELMONT DAVIS,

" United States Consul at Florence, Italy."

Indices

I. Index of Proper Names

II. General Index

I

INDEX PROPER NAMES

II

GENERAL INDEX