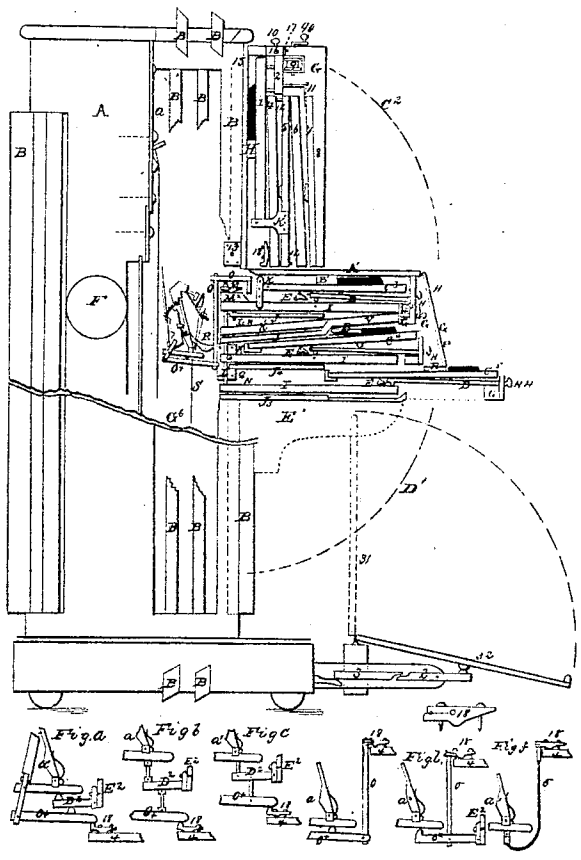
5 Sheets, Sheet 1.

T. J. V. Roz,

Piano.

No. 64,371. Patented Apr. 30, 1867.

Fig. 1.



Witnesses.

C. Richards

Inventor

T. J. V. Roz

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

5 Sheets-Sheet 2.

T. J. V. Roz,

Piano.

No. 64,371. Patented Apr. 30, 1867.

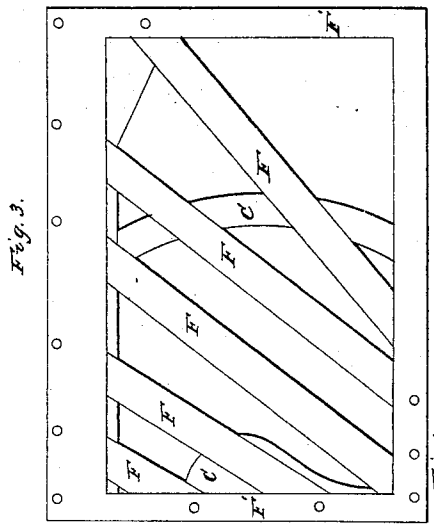


Fig. 3.

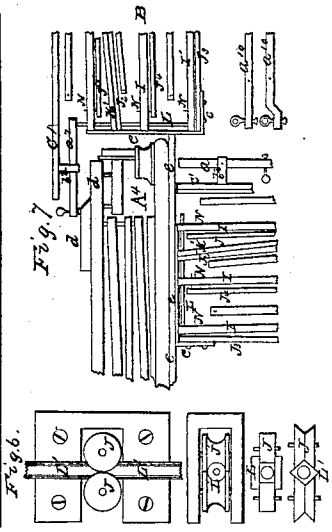


Fig. 7.

Fig. 6.

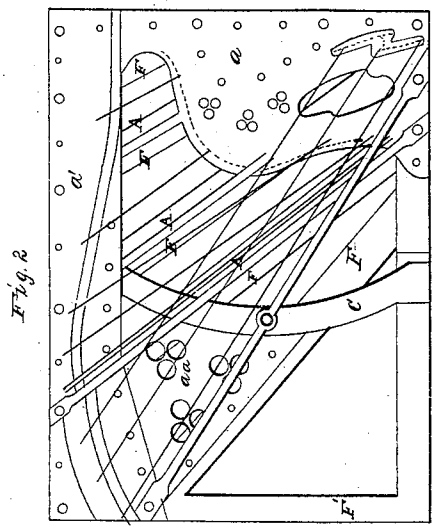


Fig. 2.

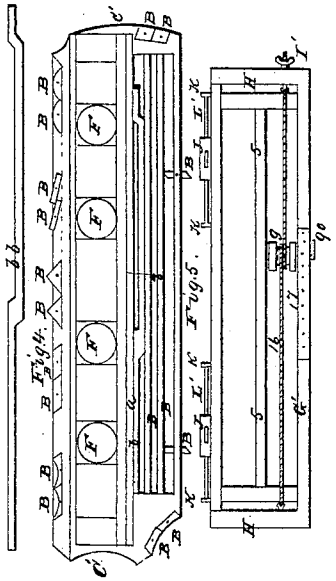


Fig. 4. Fig. 5.

Witnesses.

C. Barnes

W. Richards

Inventor

T. J. V. Roz

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

5 Sheets-Sheet 3.

T. J. V. Roz,

Piano.

No. 64,371. Patented Apr. 30, 1867.

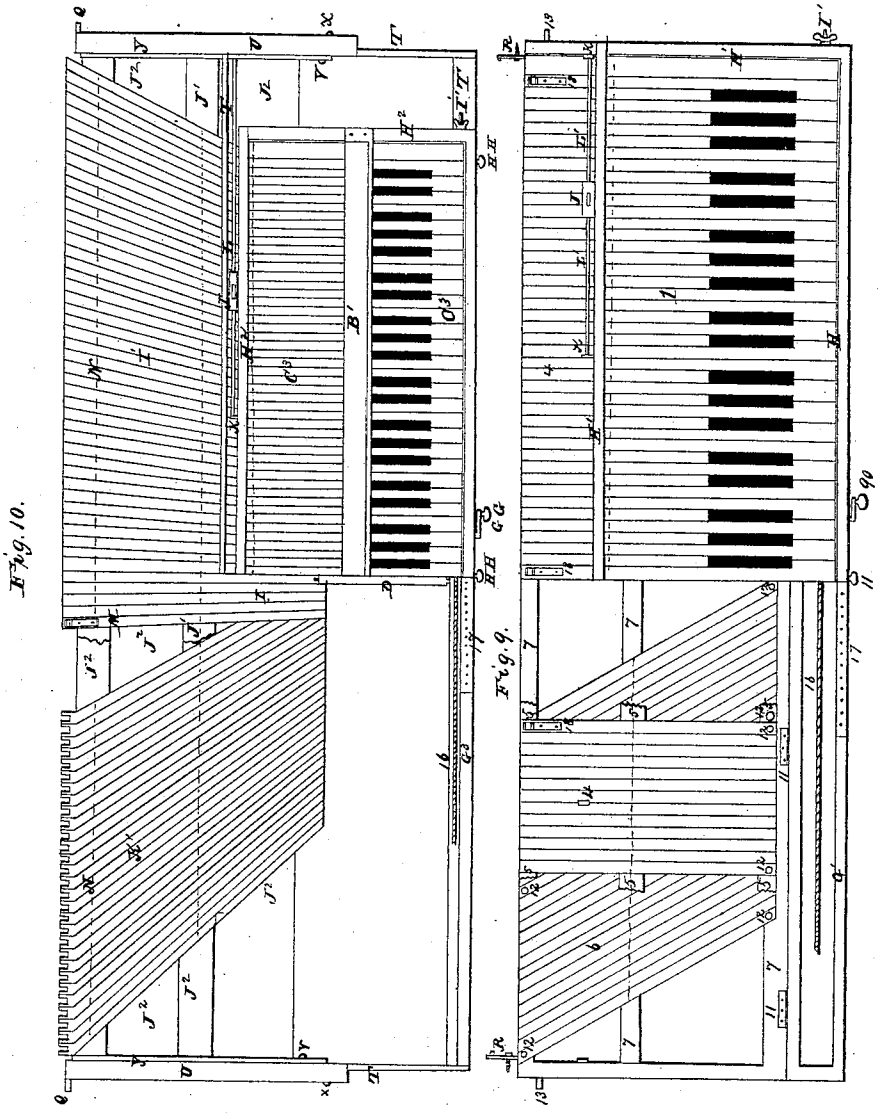


Fig. 10.

Fig. 9.

Witnesses.

Chas. Richon & Co.

Inventor.

T. J. V. Roz

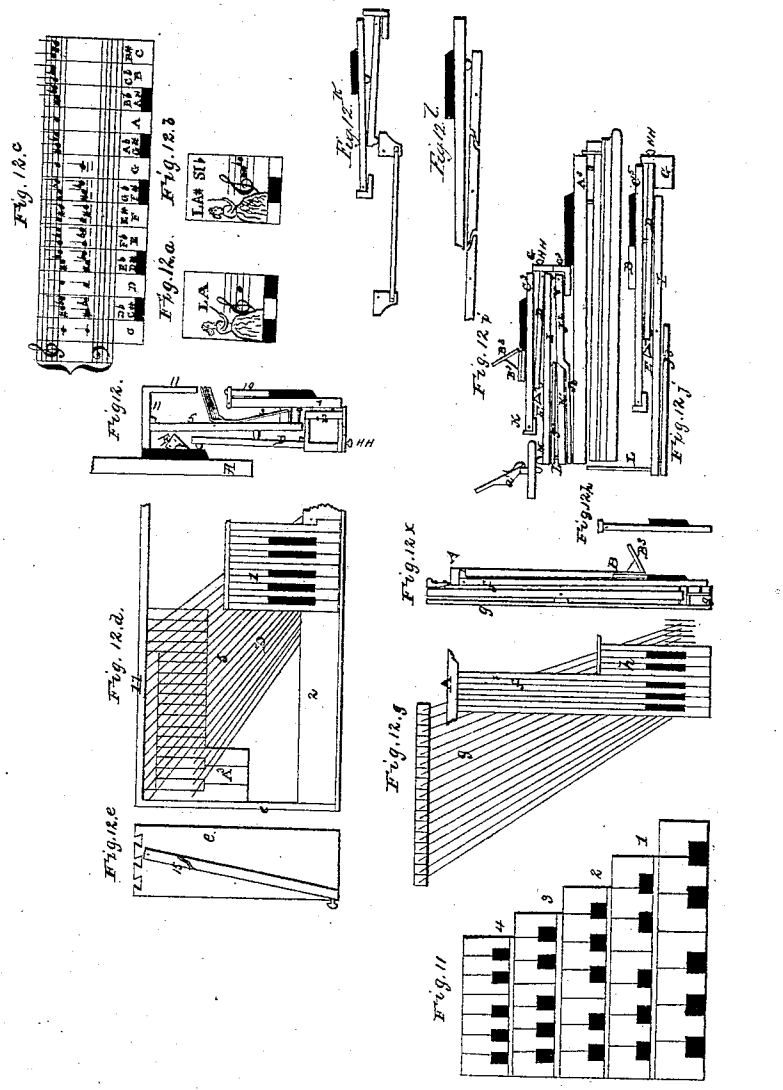
AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

5 Sheets-Sheet 4.

T. J. V. Roz,

Piano.

No. 64,371. Patented Apr. 30, 1867.



Witnesses
Charles
A. Richards

Inventor
T. J. V. Roz

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

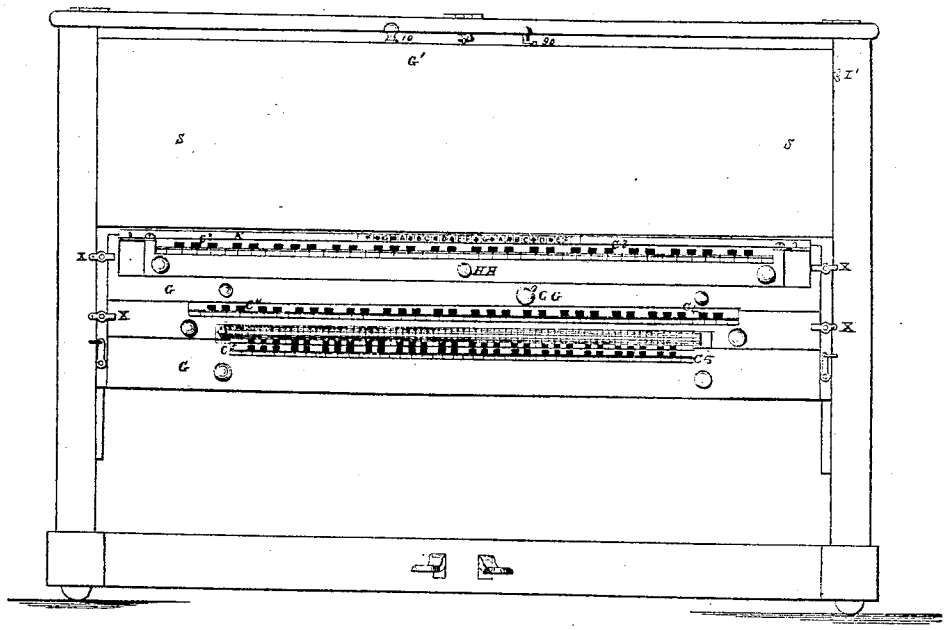
5 Sheets-Sheet 5.

T. J. V. Roz.

Piano.

No. 62,371. Patented Apr. 30, 1867.

Fig. 13.



Witnesses.
Chas. H. Smith
Geo. Wales

Inventor.
T. J. V. Roz
by C. W. Seward
Atty

AM. PHOTO-LITHO. CO. N.Y. (OSBORNE'S PROCESS)

United States Patent Office.

THEODULE JOSEPH VITE ROZ, OF PARIS, FRANCE.

Letters Patent No. 64,371, *dated April* 30, 1867.

IMPROVEMENT IN PIANO-FORTES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, THEODULE JOSEPH VITE ROZ, of Paris, in the Empire of France, have invented and made certain new and useful improvements in Piano-Fortes and in key-boards for piano-fortes, or other similar instruments.

My invention consists in an orphean piano, with elementary, solfeggio, transposing, and accompanying key-boards, divided into graduated classes, or separate progressive degrees for the instruction of the piano-forte or organ. The large key-board, which is also fitted with transposing and accompanying movements, forms the last class.

My improved key-boards are applicable to all instruments with piano key-boards, whether horizontal or vertical, such as grand, square, upright, oblique, and half-oblique piano-fortes and organs; and I do hereby declare the following to be a full, clear, and exact description of the said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Figure 1, plate 1, is a vertical section of my improvement, seen from the bass part of the instrument.

The first part of my invention relates to the construction of the back or bottom of the piano, in which I employ round columns or braces within the frame, parallel with the strings. In

Figure 2, plate 2, I have shown a front view of the strings and frame; and in

Figure 3, a back view of the frame.

In these are represented five round columns F, on which are fixed, by bolts and screws, an iron frame, *a*, and its iron bars A, parallel with the corresponding columns F. On the said frame are fixed the piano-strings, attached by the hitch-pins on the plate *a*, and turning-pin on the rest-plank *a'*. An iron bar, *b*, is fixed diagonally by bolts on the iron frame *a*, and forms a resistance to the draught of the covered strings of the bass indicated by red lines, the other strings being indicated by blue lines. This bar *b* is shown in a separate side view at *b b*, below fig. 2. *a a* is the false sounding-board; C a false wooden frame, to which the sounding-board is glued. The columns F and bars A, running in the same direction as the strings, sustain the frame and prevent the tension of the strings changing the shape of the back of the piano; and the columns F being round do not present any angles which obstruct the vibrations from the strings as they pass out at the back of the instrument. The ends of the columns F are to be square, so as to join in the surrounding frame F'. I make use of dampers B in the sides, back, or top of the case, actuated by means of pedals, to give expression to the instrument, by enabling the performer to regulate the sound passing out of the instrument.

Second, in the piano action. Fig. 1, plate 1, the lever O× is placed under the escapement of the hammer action, and fixed at one end by a fork to the action bar, and at the other to a lifter, *o*, connected to the lever O', fixed by a fork on a frame. Figures *a b c d e f*, plate 1, illustrate modifications in the positions and arrangement of the levers for communicating motion from the keys to the hammer. These are arranged with reference to the keys coming above the action in the bass, and below the action in the treble, the line of the hammers being curved, and lowest at the bass end. The key 4, figs. *a b* and *c*, plate 1, might act directly upon the lever D^2, the lever O× being removed. By this arrangement of the lever O×, lifter *o*, and lever O', I am enabled to provide for the introduction of the key-boards hereafter described, one set of key-boards being moved away from beneath the lever O', and another key-board turned into place.

The third part of my invention relates to a transposing or movable key-board, which allows of raising or lowering the tones according to the position of the key-board to the piano action.

Plate 3, fig. 9, is a plan view, showing at the right-hand end the keys of the large key-board, and at the left-hand end these keys are removed to show the piano-action key-board, and the diagonal levers forming the accompanying key-board. At the right-hand part the keys 1 are shown in the frame H', (see also in fig. 5, plate 2,) placed above the piano-action key-board 4. Under the front end of the keys 1 are fixed regulating screws, acting on the keys of the key-board 4, at the back end of which are fixed levers 18, corresponding to the lever O' for the bass, and O× for the medium and treble notes. I support the key-board 1 on anti-friction supports J, formed of two grooved pulleys, placed in a mortise, made in a wood or metal piece, secured at the hind cross-piece of the transposing frame H', and between which pulleys passes the shaft L', which is fixed in the supports K, fixed to the frame 5 of the action key-board 4, and supports the back part of the transposing

key-board. A pulley, 9, is placed in the front G′ of the bottom of the key-boards, (see fig. 5,) the axle of which pulley passes through the front G′, and receives a fixed or movable winch 9^{a}. On the said pulley a cord, 16, or its equivalent, is wound. The said cord is attached at one end to the transposing frame H′, by a ring-screw, and to the other side to an adjusting thumb-screw I′. Under the front of the transposing key-board is fixed a pin that enters in a metal plate, 17, bored with holes corresponding to each tone. The said plate is fixed on the edge of the front G′, in which also the pulley is fixed. A knob, 10, fixed to the front H′ of the transposing key-board is used for raising in order to lift the pin out of the plate 17, while the key-board is moved endwise by means of the winch 9^{a}, so as to place the keys in any desired position to the action, and thereby transpose it at pleasure.

Figures 6 and 6^{a} are elevations of the anti-friction supporting rollers and shaft L′.

Fourth. I make use of a range of levers placed diagonally to the keys and reaching to the corresponding octave notes above and below the centre octaves of the piano; these are brought into action by a pedal, so that the corresponding octave notes above or below are struck by depressing the one note, thereby increasing the volume of sound. These diagonal levers I term the accompanying key-board; the said key-board is placed underneath the piano-action key-board 4, and pivoted by hinges 11, fixed on the front G′, (see plate 1, fig. 1, and plate 3, fig. 9.) The levers forming the accompanying key-board diverge diagonally from the centre of the piano so as to divide the same in two parts: one acts on the bass, and the other on the treble notes. A lever, R, is fitted to the piano-case, and connected to a pedal by a rod *s*; this lever is employed to raise the back of the frame 7 of the accompanying key-board 6, and bring it into a position to be acted upon by the action key-board 4, under which keys 4 the lifters 12 are placed through the front and back cross-pieces of the frame 5, and correspond with each key of the accompanying key-board 6. The keys 4 act on the front ends of the keys 6 through the lifters 12, and said keys 6, being diagonal to the right or left, act under and raise the keys 4 an octave above or below the note struck; the lifters 12, beneath the back ends of said key 4, communicating the movement which is transmitted by the lever 18 and movements *o* and $O^{\times}$ to the hammer-jack; and it will be evident that the key 4, which is raised at its back end an octave off, acts through the lifter at its front end upon another diagonal key, parallel to the first, and causes the corresponding note of the third octave off to be struck, so that all the corresponding octave notes on the piano, in the bass or treble part, can be struck by the depression of one key. In consequence of this movement I name it the accompanying key-board.

It will be evident that the diagonal lever 6, instead of acting on the key 4 an octave off, might only act upon the hammer-jack, so that only the note and its corresponding octave note, one note away, will be struck. The left-hand part, plate 3, fig. 9, shows the accompanying key-board 6, on which an octave of the action key-board 4 is shown to represent its position relatively to the accompanying key-board 6. The key-boards 1, 4, and 6, are mounted in the cabinet-work or case 8 and G′, and this is attached to the piano-case by pivots at 13, so that it can be turned up, as seen in fig. 1, or turned down; the arcs C^{2} show the path described in moving this up or down.

The fifth part of my invention relates to a key-board containing the same number of notes, but each note is made smaller than those of the main key-board, so as to be adapted to the smaller hands of children; the keys communicating with the same notes as those of the main key-board. I provide three or more of these key-boards, increasing in length, as seen in plate 5, fig. 13, so as to form a series of key-boards adapted to different ages of pupils.

Figure 11, plate 4, shows an octave of an ordinary key-board, and represents the corresponding notes in the smaller key-boards 1, 2, 3, and 4.

Plate 1, fig. 1. D^{1} dotted line, showing the path described by the compartment, in which are fixed several elementary key-boards as it is turned up or down.

Plate 3, Figure 10, is a plan of one of my elementary key-boards, as drawn out for use. The right-hand half of said key-board shows the keys; at the left they are removed to shown the position of the levers K′ that are employed to form, with this diminished key-board, the accompanying key-board to strike the corresponding octave notes as aforesaid. This fig. 10 also illustrates the before-described apparatus for transposing the keys relatively to the notes. The keys C^{3} are placed in a frame, H^{2}, sustained by the frame G^{3} and slides T. Under each key C^{3} is fixed a regulating-screw acting on a counter-key, D, placed below, fixed by forks at its front end, and on the back ends of said keys are fixed pins above a triangular piece, E, running lengthwise under the key-boards, and pivoted at its ends on the sides of the frame H^{2}. A stop, H H, is placed in front of the key-board C, connected to the triangular piece E, to move the same and raise the counter-keys D, to facilitate the drawer T being drawn out. The said elementary key-board C^{3} is placed above the key-board 1, corresponding to the piano action, which keys 1 are more or less diagonal according to the size of the elementary key-board. The frame J^{1} of the key-board 1 is fixed to the sides U of the cabinet work; the drawer T above described, slides in the cabinet-work *u*. The keys C^{3} of the elementary key-board act on the counter-keys D, which, by the knob, act on the keys 1 of the action key-board, and at their extremity are fixed levers M, acting under the movements O′ for the bass, and $O^{\times}$ for the medium and treble notes, in the same manner as the levers 4, illustrated on plate 1, figs. *a b c d e* and *f*. B′ bar behind the sharps, fixed to the sides of the frame H^{2}, under which the guide-pins are fixed. I make use of a rule on which is engraved, lithographed, or printed, the key-board tableau, corresponding with the notes on their musical scale, for helping the learner to find on the key-board the notes marked on the music.

Figure 12^{c}, plate 4, represents the middle octave of this printed tableau. I apply this to either the bar B or B^{1}, fig. 1, as illustrated at B^{3}, fig. 12^{i} and fig. 12^{x}. It is fixed by hinges and can be more or less inclined by a rack on the bar B^{1}. The keys *i* have beneath the front end regulating screws acting on the keys of the accompanying key-board K′, placed below the frame J^{1} of the key-board I, and the keys K^{1} by lifters placed in the

hind cross piece of the frame J^1, raise beneath the back end the keys I an octave above or below. This accompanying key-board K′ is fitted in the same manner as the key-board G, before described. The left-hand part of fig. 10 shows the half of the accompanying key-board, and also five of the levers of the key-board I, to show their position relatively to the key-board K′, the keys of which are terminated by forks. The lifter L passing in the fork serves to guide them. The said key-board is placed on its frame J^2, on the sides of which are fixed two iron bars Y, pivoting on the front by means of two screws V, screwed on the sides U. H H, knob for raising the key-board, under which is fixed the pin entering in the rack fixed on the front G^3 of the drawer T. G G, the pulley-winch; 16, the cord; I′, its adjusting thumb-screw; N, the key pins of the key-boards; Q, pivots of the compartments; X, latches to hold the drawer open or closed.

Plate 2, Figure 7, is a section showing how the elementary, transposing, and accompanying key-boards, made as before described, can be applied to the large key-board or the keys of an ordinary piano. The compartment holding these elementary and other key-boards is attached by means of two hinged metal slides screwed on the compartment. The supports of the slides *e* are screwed under the bottom of the key-board, and to the slide the compartment is hinged so that it may be slid in under the bottom A^4 of the piano key-board, as seen at B B, fig. 7, or drawn out, turned up, and supported, as seen at B^4, when raised in front of the instrument.. The levers a^2 are acted on by the key *i*, and give motion to the key of the key-board *d*. The levers a^3 have their fulcra on the rack b^2, fixed to the table C^7, divided in two parts, one of which is fixed to the compartment and the other connected to it by hinges, thus rendering it movable so that it may be turned over when the parts are lowered into the position B B.

The two detached figures a^{10} represent the levers a^3, one of which is straight for the sharps, and the other bent for the natural keys, at the ends of which are fixed regulating screws, carrying knobs acting on the keys of the key-board *d*. On the ends of the table C^7 two screws-bolts are fitted for attaching the parts to the ends of the key-board *d*. To give facility to a child for acting upon the pedals of the instrument, I provide a slide, as illustrated in fig. 1, plate 1, containing the levers 2 and 3. This is to be drawn out so that the lever 3 acts on the pedal of the instrument, and the outer end of the lever 2 may be pressed upon by the foot or by a lever, 32 hinged to the slide; which lever 32, when not in use, may be turned up into the position shown by dotted lines, and pushed back into the instrument with the slide and levers 2 and 3.

Plate 4, Fig. 12^x and figs. 12^f and ^{g}, section and plan of an elementary key-board, placed above an action key-board formed with diagonal or diverging levers passing to the ordinary piano-forte action. By this arrangement a small or elementary key-board can be applied to an ordinary piano. The keys *f* have beneath the front end regulating screws, acting on the counter-keys *g*, fixed on a frame, and at their rear extremity they act directly on the piano action. B^3, bar behind the sharps, fixed to the sides of the frame A, and on which is fixed by hinges the rule or musical tableau, fig. 12^e, as before described. The keys may be made short, as seen by the five notes *h* in fig. 12^f, and in side view in fig. 12^h, so that this key-board may be fitted with the solfeggio shown in fig. 12 and fig. 12^i, plate 4, hereafter described.

Figure 12^i is a transverse section of an elementary key-board fitted to draw in and out, but shown as closed and placed behind the sharps over a piano key-board A^3. When it is drawn out the motion from the keys C^3 is transmitted to the hammer-jack by the key I, the same as before described; and this key-board may be fitted with the transposing and accompanying movements before described.

Figure 12^j is a transverse section of an elementary key-board placed under the bottom of the key-board A^3, and fitted to draw in and out, and when drawn out the key c^5 acts on the lever I, at the extremity of which a lifter L is fixed that acts under the hammer-jack; or, the same lifters L may act beneath the back ends of the keys of the key-board A^3. The said key-board may be fitted with the solfeggio transposing and accompanying attachments before referred to.

Figure 12^k is a section of an elementary key-board, combined with right-angle levers 20, which can be placed in any desired position, either for pressing on the keys of a key-board, or for acting under the hammer-jack, or escapement. These are connected together by a rod fixed to the right-angle levers 20 by joint-pins or pivots.

Figure 12^l, elementary key-board, combined with compound levers, that may be employed for extending the action of the piano key-board in place of single levers, such as shown at *g*, fig. 12^x.

The sixth part of my invention relates to a key-board which I term the elementary solfeggio key-board, intended for children. The same is provided with cards, on which are lithographed or printed, designs on one or both sides, showing the name of the note marked in the upper part of the card, and in the middle the note on the musical scale. At the bottom of said card the place of the given note on the key-board is indicated.

Plate 4, Figure 12, section of the elementary solfeggio key-board placed above a piano key-board A^3, ready for use.

Figure 12^d is a plan view of a part of the said key-board at the bass end. 1, keys of the elementary key-board fixed at their extremity by forks on a bar fixed to the sides *e* of the compartment. 10, a small tablet placed behind the sharps fixed to the sides of the compartment, and on which may be placed the musical tableau, fig. 12^e, as before described. 2, cross-piece fixed to the front, and on which the key-pins of the key-board 1 are fixed. Under the front end of said keys 1 are fixed regulating screws, which act on the keys of the lever-board 5, placed below. The cards fig. 12^a and fig. 12^b are fixed in notches at the ends of the levers 3. Twelve cards form the octave, and they are placed so as to stand in rows, one slightly in front of the other, and are lifted by the keys of key-board 1, so as to show the name and sound of only the note struck, and thereby amuse the learner as well as present to his eye the name and sound to be learned. These levers carrying the cards are pivoted so that there are four cards in each group or row. The rack 41 is fixed to the sides *c* of the compartment, and forms the fulcrum for the levers 3. All octaves in the whole length of the key-board may be

similarly fitted. A counter-key, 5, is fixed at its extremity by forks on the back of the compartment 11, and on its front end a regulating screw is fixed on which presses the key 1. The key 5 acts on the counter-key D, placed below to act on the key A^3, or the sharp. On the end of the counter-key D is a pin above a coupler or triangular piece E, pivoted in the sides of the compartment, and acted on by means of the stop H H, to raise the counter-keys D when required. Under the said lever D is fixed a knob or regulating screw, which acts on the key of the key-board A^3. The diagonal lines, fig. 12^4, show the positions of the keys 5 extending from the keys 1 of the solfeggio key-board, also the positions of the levers D, which are placed below them.

Figure 12^5, an elevation of the side of the compartment, and on which is shown a lever that may be employed to act on the coupler E instead of the stop H H.

In fig. 1, plate 1, I have shown a vertical section of the improved piano, in which are shown, by corresponding letters of reference, the various key-boards and levers before described. There may be a portable music-stand introduced, as shown at P. At G^3 I have represented the case as broken to show that the same may be made of any desired height.

I do not claim an open frame for the back or bottom of the piano, neither do I claim diagonal levers extending from one octave note to the next.

What I claim, and desire to secure by Letters Patent, is—

1. The construction of the back or bottom of the piano of round or oval columns F, in combination with an iron frame *a* a^1, and bars A, and the bar *b*, as and for the purposes specified.

2. I claim the piano action composed of the levers O′, lifter *o*, and lever $O^\times$, applied in the manner specified, so that the same shall be separate from the key-boards, in order that one key-board may be moved away and another brought into place, as set forth.

3. I claim the anti-friction supports J L′, winch 9^a, cord 16, and tightening screw I′, in combination with the transposing key-board 1, and rack 17 for moving said key-board with facility and retaining it in place as set forth.

4. I claim the small or elementary key-boards, fitted so as to be movable, and applied in the manner specified, to act upon the same notes as the main key-board, as and for the purposes specified.

5. I claim the cards connected with the respective notes, and raised by the depression of the note, so as to exhibit the name and sound of the particular note to aid in the instruction of elementary music, as set forth.

6. I claim a series of levers composing the action between the keys and hammers, said action connecting on one line with the keys, and lengthened downward at the bass end, and projected upwards at the treble end, the intermediate connections being graduated so as to reach the hammers above the notes at the treble end and below the notes at the bass end, as specified.

T. J. V. ROZ.

Witnesses:

E. CHIRIO,

E. RATTIER.