

P. HANS.
KEYBOARD FOR MUSICAL INSTRUMENTS.
APPLICATION FILED MAR. 5, 1920.

1,421,464.

Patented July 4, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

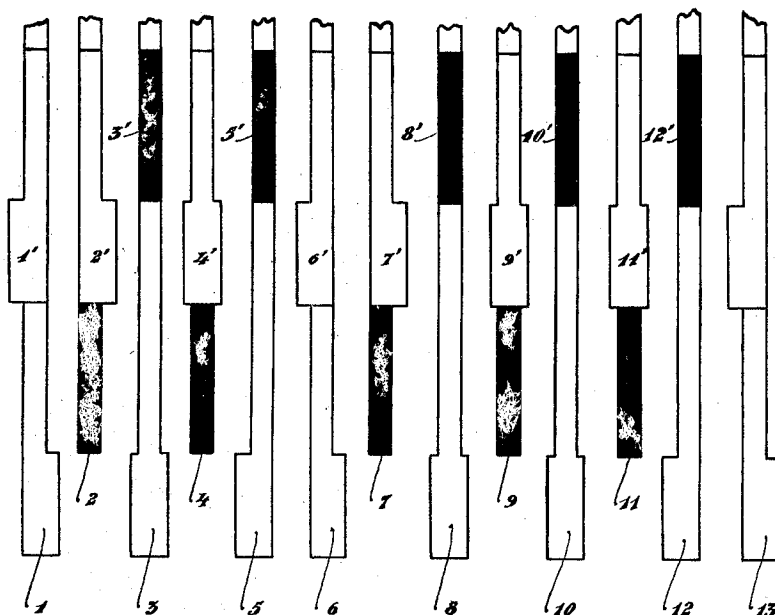
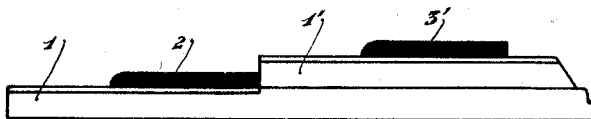


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 2.

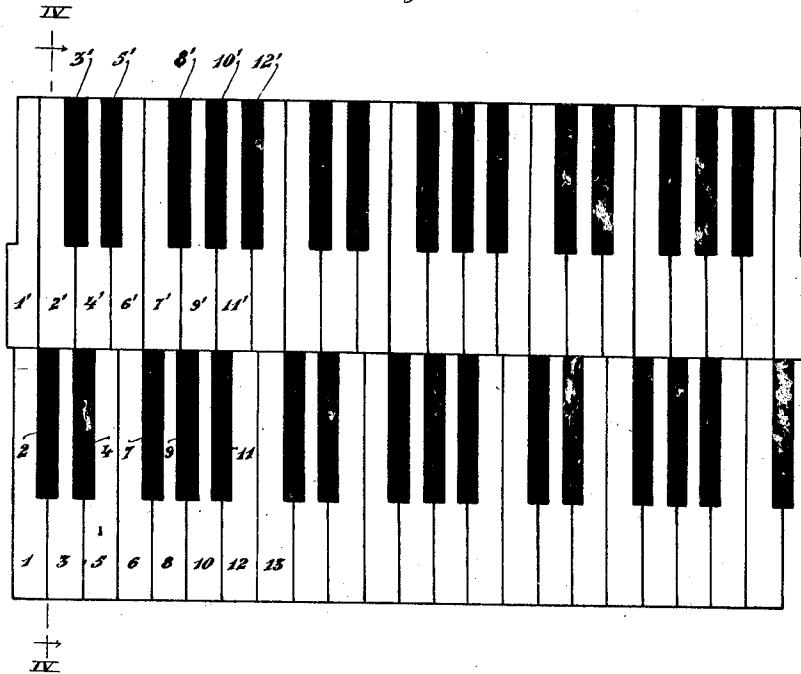
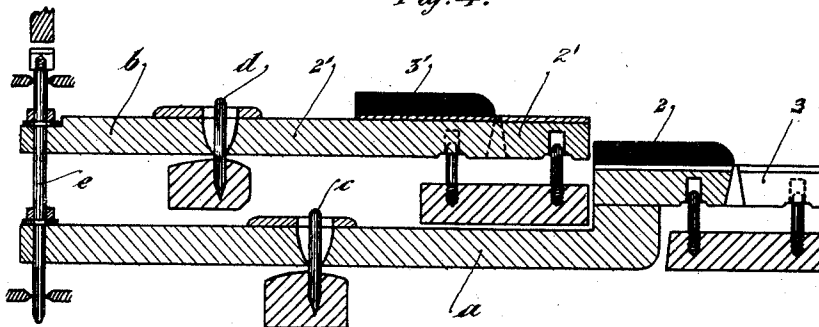


Fig. 4.



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UNITED STATES PATENT OFFICE.

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KEYBOARD FOR MUSICAL INSTRUMENTS.

1,421,464.

Specification of Letters Patent.

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Application filed March 5, 1920. Serial No. 363,599.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, PIERRE HANS, engineer, subject of the King of Belgium, and residing at Brussels, in the Kingdom of Belgium, have invented certain new and useful Improvements in Keyboards for Musical Instruments, (for which I have received a patent in France, No. 489,770, dated March 11, 1919, and filed applications as follows: Holland, May 10, 1919; Great Britain, July 15, 1919; Germany, July 16, 1919; Belgium, June 4, 1917), of which the following is a clear and exact description.

The main object of the present invention is to provide a permanent, additional key board in order to facilitate playing in general and the execution of intricate passages in particular, and to open a new field for the composer, who may now write music which formerly was impossible to execute, and create new effects for musical instruments.

The present invention relates to a twin keyboard for musical instruments, such as pianos, mechanical pianos, organs, harmoniums and the like. Each octave of the ordinary keyboard consists of seven white keys and five black keys.

Each key is fixed upon a lever operating the piano-action. My twin keyboard is composed of two keyboards of the usual shape and type; but the second one plays a semitone higher than the first one, the keys therefore corresponding to different notes. For instance the C (white key) of the second keyboard produces the C sharp (black key) of the first keyboard and the C sharp of the second keyboard (black key) produces the D (white key) of the first keyboard. The result of this offset is that the notes given by the black keys of the second keyboard correspond to notes given by white keys of the first keyboard, and that the notes given by the black keys of the first keyboard are given by white keys of the second keyboard.

Some of the advantages of providing a piano with my double keyboard will here be given.

It is only exceptionally, and by choosing suitable tonalities that the left hand is able to insert itself between the fingers of the right hand, which occupies the white keys.

The addition of a second keyboard connected with the first, completely overcomes the difficulty.

It is only when each hand has a keyboard at its disposal that pianoforte music can employ 10 notes out of the thirteen of the octave under consideration, and that in any key whatsoever. This last point has its importance, for modern music being essentially modulatory, it is necessary that all melodic "figures," all combinations should be capable of easy reproduction in any key. It is clear, from what I have just said, that music which would be totally unplayable on the ordinary keyboard can be written for the double keyboard.

On the other hand, numerous passages conceived for the traditional keyboard are infinitely easier of execution, not only on account of the two keyboards, but as will be pointed out later, on account of the tuning to a semitone higher.

Chromatic passages, so difficult on the ordinary keyboard, are here extraordinarily simple of execution, for it suffices to repeat the same "figures," with the same fingering, on the two keyboards alternately. Transposition is likewise considerably facilitated thereby.

As for new effects, it is these which form the principal attraction of the double keyboard. They are legion and flow quite naturally from the fingers of the pianist.

The modern composer will now be given a very much wider field, and I feel sure that this keyboard arrives at the right moment, for the masters of the piano have extracted from the old keyboard all that it can give and there remains little to glean when one has the misfortune to be born after Chopin, Liszt, Saint Saëns, Debussy, Ravel, and all the rest. Those who are willing to take the trouble to study the double keyboard will discover in it, at each step, now combinations, heretofore almost impossible to imagine, since they were impossible to execute.

The addition of a second keyboard tuned a semitone above the first, means that the piano is really equipped, without its appearing so, with two primitive keyboards, that is to say, with two keyboards without black keys. Indeed, the notes given by the black

keys on the first keyboard are given by the white ones on the second. With this arrangement it is possible to replace a "black" by a "white" key, and vice-versa.

5 This is important, for those white keys that are difficult to take, because of their being crammed in between two black ones, become easy of manipulation on the second keyboard, where they take the form of black
10 keys. The examination of thousands of pianoforte passages has proved that every passage difficult on one of the keyboards is easier on the other. The pupil is therefore able to play the irregular scales (i. e., scales
15 beginning on a black key) without having learned them. Studies in the keys of C, D, F and G, which are generally the only ones used by beginners, may now extend to all keys, without offering the least difficulty to
20 the pupil, and as a consequence, will take a more modern and artistic form, that is to say, more attractive. Even the professional will not disdain to play a rapid scale, for example that of E flat minor, on the second
25 keyboard, where it will take the form of a scale in D minor, which is much easier to execute. The scale of B flat becomes on the second keyboard the scale of A minor, which is easier running.

30 The annexed drawings represent the arrangement of the twin keyboard according to the present invention:

Fig. 1 shows in plan the different keys spread out to indicate the relation between
35 individual keys on the two key boards;

Fig. 2 shows them close together in their position on the instrument;

40 Fig. 3 is a side view; all three figures representing the theoretical arrangement of the keys;

Fig. 4 represents one embodiment of the invention as a practical realization of the improved double keyboard and is a section along line IV—IV of Fig. 2 looking in the
45 direction of the arrows.

In Figure 1 the key 1, which corresponds for example to the key C in the conventional keyboard, has a continuation or extension key 1' called B; the key 2 or C sharp, has an extension key 2' called C; the key 3 or D, has an extension key 3' called C sharp; the key 4 or D sharp, has an extension key 4' called D; the key 5 or E, has an extension key 5' called D sharp; the key 6 or F, has an extension key 6' called E; the key 7 or F sharp, has an extension key 7' called F; the key 8 or G, has an extension key 8' called F sharp; the key 9 or G sharp, has an extension key 9' called G; the key 10 or A, has an extension key 10' called G sharp; the key 11 or A sharp, has an extension key 11' called A; the key 12 or B, has an extension key 12' called A sharp; the key 13 or C begins another
65 octave.

It will be seen from Figure 1, that the levers 1 and 6, corresponding to the notes C and F on the first keyboard carry two white keys; that the levers 3, 5, 8, 10 and 12, corresponding to the notes D, E, G, A, B on the first keyboard carry one white key and one black key; that the levers 2, 4, 7, 9 and 11, corresponding to the notes C sharp, D sharp, F sharp, G sharp, A sharp, on the first keyboard carry one black key and
70 one white key.

The twelve keys of the octave are represented by numerals 1 to 12 and when assembled they give the appearance of two superposed keyboards exactly alike (Figures 2 and 3), the second keyboard differing only from the first by playing a semi-tone higher, because the C of the second keyboard is placed upon the C sharp key of the first.

From this combination of two keyboards
85 the following facts will be evident:

First; all the scales (major and minor) can be played with the same fingering, 1 2 3 1 2 3 4 5 (continental fingering). Thus, the scales of C, D, E, G, A, B, can all be played on the first keyboard with the same
90 fingering (1 2 3 1 2 3 4 5). The scales in sharps and flats (that is to say, starting from the black keys on the first key board) will be played on the second keyboard, starting from a white key, and with the same fingering (1 2 3 1 2 3 4 5). The scale of F sharp will be played on the second keyboard with the same fingering as the scale F (1 2 3 4 1 2 3 4).
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Second, passages played with hands crossed, always very difficult on the old keyboard owing to the lack of space, are very easily executed on the double keyboard when played with one hand on each.
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Third, modern piano music, very modulated in character, comprises a large number of parts and passages which are of very much easier execution upon the improved keyboard, for there are always two keys
110 available for playing the part; moreover, both keyboards may be played on at the same time.

Fourth, to transpose to a semi-tone higher, it is only necessary to play the same notes
115 upon the second keyboard.

Fifth, the arrangement allows also of producing a large number of new musical effects, combinations, parts and passages, which could not be executed upon the old
120 keyboard.

Sixth, in an octave of the ordinary piano there are thirteen different notes. One hand can only take five of them and it hides then the eight remaining notes which cannot possibly be taken by the other hand. In the double keyboard, on the contrary, these eight remaining notes may be attacked by the other hand on the second keyboard.

This last is the principal advantage and
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it is especially with the view of obtaining it that I have invented the double keyboard.

The practical realization of the double or twin keyboard differs slightly from the theoretical arrangement as described above and shown in Figs. 1 and 3. The second keyboard being nearer than the first to the point of support or pivot of the key, the touch will naturally be harder. To obviate this disadvantage, the keys of the second keyboard (see Figure 4) are fixed upon levers *b* independent of the levers *a* of the first keyboard and having pivots *d* distinct from pivots *c* of the first keyboard. This arrangement is equivalent to providing the instrument with two keyboards completely distinct and independent. In order to facilitate the playing of the lever *b* on the second keyboard, it is also raised slightly in relation to the first lever *a*; the levers both *a* and *b* operate the same actuating element *e* common to the two keyboards. This element is shown for the sake of illustration as an abstract but it will of course be understood that it may be a sticker for any individual element in a unit of action.

For each note, therefore, there are two levers, operating the same actuating element and corresponding to keys of different nomenclature. This arrangement allows all the keys on the two keyboards to be given the same touch and the same depression, while retaining all the advantage above enumerated for the invention.

Consequently Figures 1, 2, and 3 are but diagrammatic representation of the theory of this invention, whereas Figure 4 shows how the invention is best carried out in practice.

What I claim is:

1. A twin keyboard for musical instruments comprising two keyboards of the conventional type both being simultaneously accessible and one situated behind the other, one keyboard having its keys offset a semitone in relation to the keys of the other keyboard and one key in each keyboard being connected with the same actuating element whereby each note can be produced by two keys of different nomenclature, one in each keyboard.

2. In a musical instrument having a conventional keyboard consisting of seven white and five black keys to the octave, each of said keys being adapted to operate an actuating element for a different note in the chromatic scale, the combination of a

second keyboard having similar keys, each black key on the second keyboard being permanently connected with the actuating element of a white key on the first keyboard, all keys on both keyboards being simultaneously accessible.

3. In a musical instrument having a conventional keyboard consisting of seven white and five black keys to the octave said keys being adapted to operate an actuating element for a different note in the chromatic scale, the combination of a second keyboard having similar keys, all keys being simultaneously accessible, each black key on the second keyboard being permanently connected with the actuating element of a white key on the first keyboard, and the actuating element for each black key on the first keyboard having permanent connection with a white key on the second keyboard.

4. In a musical instrument having a conventional keyboard consisting of seven white and five black keys to the octave, each of said keys being adapted to operate an actuating element for a different note in the chromatic scale, the combination of a second keyboard having similar keys, all keys on both keyboards being simultaneously accessible, each black key on the second keyboard being permanently connected with the actuating element of a white key on the first keyboard and the actuating element of each black key on the first keyboard having permanent connection with a white key on the second keyboard, the connection being such that any key on the second keyboard will produce a note a semitone different from a key of the same denomination on the first keyboard.

5. In a musical instrument played by conventional keys having an actuating element for each note in the chromatic scale, a long key and a short key for each actuating element, each of said keys having an individual fulcrum, said two keys being superimposed one as regards the other, one of said two keys bearing the conventional characteristics of the note produced by the actuating element and the other bearing the conventional characteristics of a note a semitone different, both keys being simultaneously accessible.

In testimony whereof I affix my signature in presence of two witnesses.

PIERRE HANS.

Witnesses:

F. RUYDANT,
NIC. DIEPART.