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KEYBOARD FOR MUSICAL INSTRUMENTS  
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FIG. 1  

FIG. 2  

FIG. 3  

INVENTOR  
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This application is a continuation-in-part of my application Serial No. 819,097, filed Jan. 28, 1944.

My invention relates to a new type of keyboard for piano, organ, accordion, and similar instruments, which have twelve notes per octave.

An object of my invention is to simplify the technique of playing the keys and instruments through the provision of a simplified keyboard.

My invention will be understood by reference to the drawings wherein: Fig. 1 is a plan view of a simplified form of keyboard embodying my invention. Fig. 2 is an edge view of Fig. 1 as viewed looking toward the end of the keyboard. Fig. 3 is a plan view of a more advanced type of keyboard embodying my invention. Fig. 4 is an edge view of Fig. 3 as viewed looking toward the end of the keyboard.

Von Janko (360,285) March 29, 1887, McChesney (161,805) April 6, 1875, Gould and Marsh (24,021) May 17, 1859, Trotter (Br. 3,404) March 4, 1811, Menchaca (Dent's Musical Dictionary, p. 327), and others have pointed out the advantages of the duplex whole tone keyboard of the general form wherein the row of keys closest to the performer constitutes a whole tone scale, the next row constitutes a whole tone scale one semitone higher than the first, the third row is the same as the first, the fourth row (if any) is the same as the second, etc. If a sufficient number of rows of keys are provided in the keyboard, this results in the technique of playing any given figure being the same regardless of the keynote in which the figure is played. These former inventors, however, failed to point out that under some circumstances their keyboards are inconvenient or inoperable. Suppose for instance that one wishes to play on the keyboard the chord G-E-G-C with the thumb, index, middle, and little fingers of the right hand, this being played on the second and third rows of keys. (The first row of keys is the one nearest the performer, the second row is the next row farther back, etc. Throughout this specification and the claims a row of keys shall be considered to be all of the keys or portions of keys which lie between two vertical planes, one of which includes the front vertical faces facing the performer of a rank of keys, and the other of which includes the next line farther from the performer at which another rank of keys begins and has front faces facing the performer or at which the first mentioned rank terminates in a rear face facing away from the performer.)

Suppose that the music now calls for sustaining the E and G while lowering both C's to B. If we attempt to do this by playing the B's on the third row, the index finger on E will be found to be all doubled up so as to be playing on the back of its knuckle while if we try to play the B on the first row it will be found that the middle finger is not long enough to continue to reach G.

This difficulty is partially alleviated in the modifications of Trotter, Gould and Marsh, and Menchaca, which utilize one row of comparatively narrow keys such that the index finger, in the case cited, could slide in between the keys. Menchaca uses only two rows (one wide, one narrow), while Gould and Marsh, and Trotter use three rows of keys of which only one row consists of narrow keys. Thus while with this arrangement it becomes possible to execute the figure discussed above, a different technique is required to execute this same figure one semitone higher in pitch. Consequently, in overcoming the difficulty mentioned above, these inventors have sacrificed one of the possible advantages of the duplex whole tone keyboard which is to secure the same technique for the playing of a given figure when played in any keynote.

My invention consists in providing at least two levels of keys which are of the narrow type, as shown in Figs. 1 and 2, or 3 and 4. Referring to Figs. 1 and 2, the B key in the first row is of full width, and first level (lowest level) 5 is of full width, that is, approximately one sixth of the octave spacing, but it has a narrower portion 6 on the same level of width approximately one twelfth the octave spacing which projects into the second row between the forward half of the B flat and C keys of the second row and second level whose width is also approximately one twelfth octave. All keys of the second, third, and fourth rows and levels are narrow throughout their length. (Throughout this specification and the claims a key designated as "narrow" shall be understood to have a playing surface of width approximately 1/6 of the octave spacing, it being understood that this fraction may be varied somewhat in
the design, in order to make room for the finger to pass between two narrow keys and strike a narrow key lying in the same row at a lower level; a key designated as "full width" shall be understood to have a playing surface of width approximately 1/5 of the octave spacing, there being only sufficient space between keys to avoid rubbing of adjacent keys against each other.) The B key has a rear portion raised to the third level, as shown, which extends through the third and fourth rows. The D flat, E flat, E, G flat, and A keys are like the B key.

The B flat key is narrow throughout, lies at the second level in rows 2 and 3, and at the fourth level in row 4. The C, D, E, G flat, and A flat keys are like the B flat key.

If now the chord C--E--G--C is to be played with the thumb, index, middle, and little fingers of the right hand on levels 2 and 3, E and G may be sustained and the C's lowered to B by sliding the hand forward slightly and playing the B's on level 3. In this forward motion, the index finger on E can slide into row 3 with ease. Suppose now this same figure is to be played one semitone lower; the chord B--E--G flat--B is played on levels 1 and 2, E flat and G flat are sustained and the B's lowered to B flat by sliding the hand forward slightly and playing the B flats on level 2: In this forward motion, the index finger on E flat can slide into row 2 with ease. Thus not only has it been possible to execute this particular figure with ease, but the technique and all of the finger motions are the same when executing the figure when based on any keynote. This is true of any figure whatsoever.

In rapid playing, the fingers may sometimes slide off of the narrow keys of Fig. 1. A modification which alleviates this difficulty while retaining the advantages of Fig. 1 is shown in Figs. 3 and 4. Here the first level keys 5 are similar to those of Fig. 1 and have a narrow portion 6 projecting into row 2. The keys of the second level are narrow at the front part 8 of row 2 and wide at the rear part 9 of row 2, and have a narrow portion 10 projecting into row 3. The third level keys are of the same shape as the second level keys. The fourth level keys are of the same shape as the front portion of the second level keys, but they have no narrow portion extending into any higher numbered row. This construction provides an interlace into which a finger may slide when executing a figure as outlined above, and at the same time provides a wide portion of the key, which prevents the fingers from sliding off the key.

The preferred dimensions for the keys are shown in Figs. 1 and 2 but are subject to considerable variation. The keys may be marked or distinguished by any of the methods shown in the references cited, or by means of a key marker as described in my copending application 519,997. If desired, the keys of levels 1 and 3 may be white and those of levels 2 and 4 black. Row 4 may be omitted, or additional rows may be added following the same scheme. A whole tone scale is a scale composed of 6 equal musical intervals per octave. The lateral placement of a key refers to the position of the fore-aft centerline of the key in the direction to the right or left of the performer.

1. A keyboard for a musical instrument having 12 notes per octave, comprising: two sets of keys whose playing surfaces are arranged in 4 rows and 4 levels, the keys of the first set sounding the 75 tones of a whole tone scale, the keys of the second set being laterally placed between the keys of the first set, each key of the second set sounding a tone one semitone from each of the tones sounded by the adjacent keys of the first set; a key of the first set being of full width in level 1 row 1, being narrow in level 1 row 2, having a narrow portion in level 3 row 1, and being narrow in level 3 row 4; and a key of the second set having a narrow portion in level 2 row 2, being narrow in level 2 row 3, and having a narrow portion in level 4 row 4.

2. A keyboard for a musical instrument having 12 notes per octave, comprising: two sets of keys whose playing surfaces are arranged in 3 rows and 3 levels, the keys of the first set sounding the tones of a whole-tone scale, the keys of the second set being laterally placed between the keys of the first set, each key of the second set sounding a tone one semitone from each of the tones sounded by the adjacent keys of the first set; a key of the first set being of full width in level 1 row 1, being narrow in level 1 row 2, having a narrow portion in level 3 row 1, and being narrow in level 3 row 2; and a key of the second set having a narrow portion in level 2 row 1, being narrow in level 2 row 3, and being narrow in level 4 row 4.

3. A keyboard for a musical instrument having 12 notes per octave, comprising: two sets of keys whose playing surfaces are arranged in 4 rows and 4 levels, the keys of the first set sounding the 75 tones of a whole tone scale, the keys of the second set being laterally placed between the keys of the first set, each key of the second set sounding a tone one semitone from each of the tones sounded by the adjacent keys of the first set; a key of the first set being of full width in level 1 row 1, being narrow in level 1 row 2, having a narrow portion in level 3 row 1, and being narrow in level 3 row 2; and a key of the second set having a narrow portion in level 2 row 1, being narrow in level 2 row 3, and being narrow in level 4 row 4.

4. A keyboard for a musical instrument having 12 notes per octave, comprising: two sets of keys whose playing surfaces are arranged in 3 rows and 3 levels, the keys of the first set sounding the tones of a whole-tone scale, the keys of the second set being laterally placed between the keys of the first set, each key of the second set sounding a tone one semitone from each of the tones sounded by the adjacent keys of the first set; a key of the first set being of full width in level 1 row 1, being narrow in level 1 row 2, having a narrow portion in level 3 row 1, and being narrow in level 3 row 2; and a key of the second set having a narrow portion in level 2 row 1, being narrow in level 2 row 3, and being narrow in level 4 row 4.

5. A keyboard for a musical instrument having 12 notes per octave, comprising: two sets of keys whose playing surfaces are arranged in 4 rows and 4 levels, the keys of the first set sounding the 75 tones of a whole tone scale, the keys of the second set being laterally placed between the keys of the first set, each key of the second set sounding a tone one semitone from each of the tones sounded by the adjacent keys of the first set; a key of the first set being of full width in level 1 row 1, being narrow in level 1 row 2, having a narrow portion in level 3 row 1, and being narrow in level 3 row 2; and a key of the second set having a narrow portion in level 2 row 1, being narrow in level 2 row 3, and being narrow in level 4 row 4.

6. A keyboard for a musical instrument having
12 notes per octave, comprising: two sets of keys whose playing surfaces are arranged in three rows and three levels, the keys of the first set sounding the tones of a whole-tone scale, the keys of the second set being laterally placed between the keys of the first set, each key of the second set sounding a tone one semitone from each of the tones sounded by the adjacent keys of the first set; a key of the first set being of full width in level 1 row 1, being narrow in level 1 row 2, and in level 3 being narrow at the front portion of row 3 and full width at the rear portion; and a key of the second set in level 2 being narrow at the front portion of row 2 and full width at the rear portion, and being narrow in level 2 row 3.

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