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PIANO KEYBOARD

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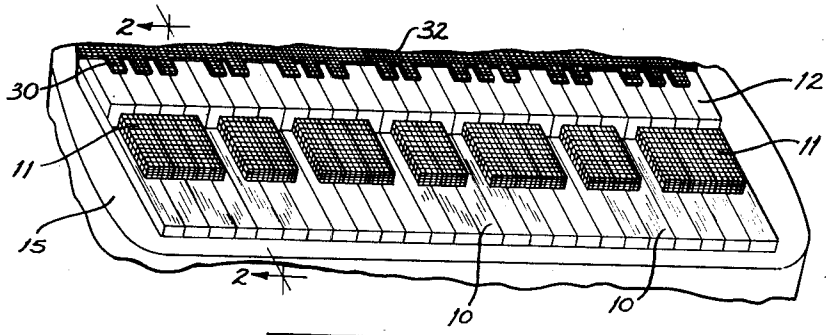


FIG. 1

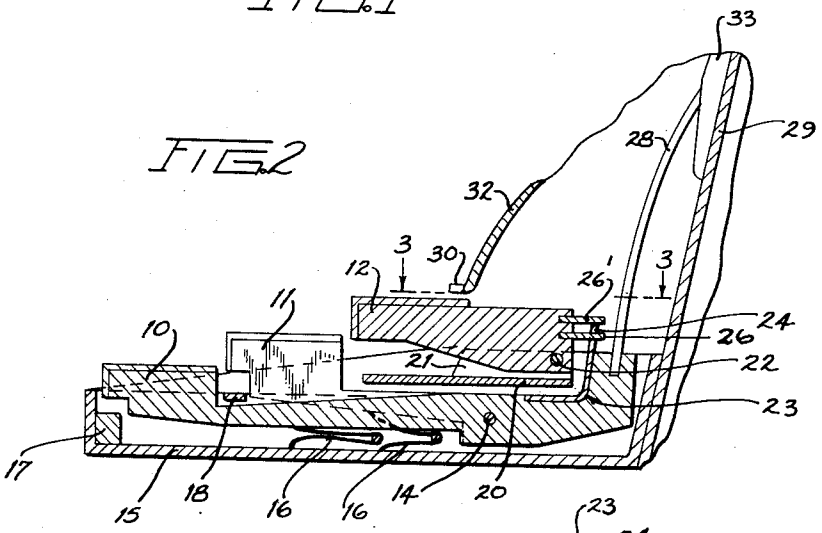


FIG. 2

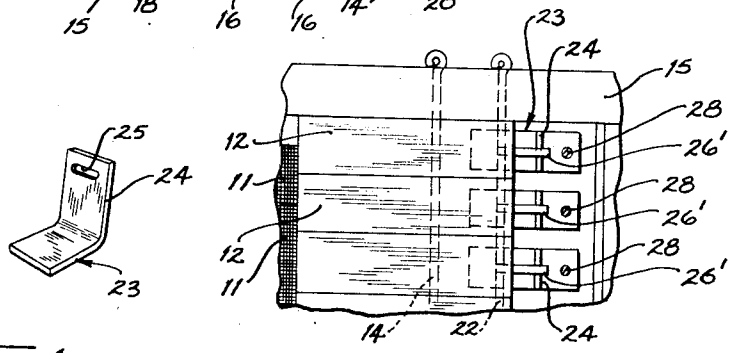


FIG. 3

FIG. 4

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PIANO KEYBOARD

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3 Claims. (Cl. 84—423)

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This invention relates to new and useful improvements in piano keyboards.

The deficiencies embodied in the standard piano keyboard are well known, and in the past numerous attempts have been made to produce new keyboards which overcame the defects and deficiencies of the standard piano keyboard. However, such improved keyboards have met with little or no success for the reason that the standard piano keyboard has become so well known that the resistance to change is too great.

In my prior invention on this subject, covered by U. S. Letters Patent No. 2,203,393, patented June 4, 1940, I have constructed the theoretically ideal keyboard. However, this keyboard has met with little success because of the great resistance to the change from the standard keyboard already mentioned.

This invention particularly proposes the construction of a new piano keyboard which is substantially identical to the standard piano keyboard and yet embodies several important changes which eliminate the main defects of the standard piano keyboard. With my new keyboard it is not necessary to relearn the fingering of the notes. Anyone who can play on a standard piano keyboard can play on this new keyboard. For this reason the resistance to change will not be so great. My new piano keyboard eliminates one of the main defects of the standard piano keyboard, namely, that the black keys are not as wide as the white keys. Because of the narrowness of the black keys there is a tendency for the thumb (which is the pivot finger), to roll off the black keys, especially during the execution of an arpeggio. In fact, all piano text books try wherever possible to reroute the fingering so that instead of starting the arpeggios with the thumb on the black keys, the second finer is substituted and the thumb used only on the white keys.

It is an object of this invention to construct the new keyboard with the black keys as wide as the white keys and positioned midway between the adjacent white keys in the same relationship that they now hold in the standard piano keyboard. Of course, this construction eliminates the spaces between the black keys. This invention proposes the provision of a third row of white keys, higher than the second row of black keys, and aligned with the first row of white keys and selectively connected with and corresponding with the white keys of the first row in order to form rear striking surfaces for the first row of white keys. It is pointed out that another

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one of the bad features of the standard piano keyboard is the necessity of having to reach in between the black keys to strike the narrow areas of the white keys in certain fingering positions. Persons with large fingers find it difficult to reach in between the black keys. Moreover, the touch of the white keys at this area is entirely different from the touch on the front striking surfaces of the white keys. It is pointed out that the hand is normally equipped with three long middle fingers and a short finger at each end, fingers 1 and 5. It is practical and convenient when spanning an octave with the first and fifth fingers in one row to operate keys in the next higher row. On the standard piano keyboard this is practical if the first and last fingers span an octave on the first row. With my new keyboard it is now possible to have the same ease of manipulation in spanning an octave in the second row, that is, the black keys, because of the duplication of the first row in the third row. From the second row the fingers may easily reach forward to the third row, and in this way avoid the necessity of reaching in between the narrow spaces left by the narrow black keys in a standard piano keyboard.

It is another and important object of this invention to provide for the pivoting of the third row of keys in a certain way in relation to the pivoting of the first and second rows of keys so that touch and downward motion of all keys are equal.

Another object of this invention resides in a specific construction for coupling together the first and third rows of keys in such a manner that they operate freely and noiselessly.

Still another objection of the invention is to provide suitable markers for the third row of keys to guide a player in their proper selection. It should be understood that the white keys on the standard piano keyboard are identified only by their position with respect to the groups of two and three black keys. It is proposed that said markers be arranged in groups of two and three along the back edge of the third row of keys. This is advisable because while the hand is operating keys in the second row, the grouping of the black keys are more or less hidden by the hand.

Another object of the invention is the construction of a piano keyboard as described which is simple and durable and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, refer-

ence will be had to the following description and accompanying drawing, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing forming a material part of this disclosure:

Fig. 1 is a fragmentary perspective view of an accordion provided with my new piano keyboard.

Fig. 2 is an enlarged sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a fragmentary horizontal sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a perspective view of one of the brackets used in the connection between keys of the first and third rows.

My new piano keyboard includes a first row of adjacent white keys 10, and a second row of spaced groups of two and three black keys 11. The black keys of each of said groups are adjacent each other and are as wide as said white keys and positioned midway between adjacent white keys. My new piano keyboard is identical in so far as note arrangement is concerned, with the standard piano keyboard. However I provide a third row of white keys 12 higher than said second row of black keys 11 and aligned with said first row of white keys 10 and selectively connected with their corresponding white keys of said first row in order to form rear striking surfaces for said first row of white keys.

In the particular construction shown, the first row of white keys 10 and the second row of black keys 11 are pivotally mounted on a rod 14 extended across from side to side of the frame 15 of the keyboard. The front end of each key is urged upwards by a spring 16. A strip 17 mounted within the frame 15 limits the amount that the keys of the first row may be depressed. Another strip 18 limits the amount to which the keys 11 of the second row may be depressed.

A horizontal partition 20 is mounted across the ends of the frame 15 and is provided with a plurality of longitudinal slots 21 in which the third row of keys 12 are set. A rod 22 is mounted across the ends of the frame 15 and through the slots 21 and the keys 12 for forming the pivots for the third row of keys. An angle bracket 23 is attached by its bottom horizontal arm upon the inner end of each key 10. Each of these angle brackets has its vertical arm 24 formed with a horizontal slot 25. Each key 12 is provided with a pin 26 which engages through the slot 25 of its corresponding bracket 23. Each key 12 is also provided with a resilient piece of wire 26', or leaf spring, which engages the top edge of the arm 24 of its corresponding bracket 23. The inner ends of the keys 10 and 11 support the usual valve stems 28 with valves 33 which operate upon the usual valve plate 29. A spaced group of two and three black markers 30 are provided for the third row of white keys 12 to show the relationship of the black keys to the first row of white keys. These spaced groups of markers 30 comprise serrations or projections from the front grille 32 of the accordion, or other instrument provided with the keyboard.

The operation and use of the new keyboard may be understood from the following:

Any one who can play on a standard piano keyboard is capable of playing on this new keyboard, and at the same time is not hampered by certain deficiencies of the standard keyboard. Since the black keys 11 are just as wide as the white keys 10 the tendency for the thumb to roll off of the black keys is entirely eliminated. When the player strikes some notes in the first row of white keys 10 he can conveniently reach back to strike notes in the second row of keys, namely, the black keys 11. When playing on the black keys 11 the player does not have to strike between the black keys as in a standard keyboard, but may reach back to the third row of white keys 12. When reaching to the third row of white keys 12 the markers 30 show the relationship of the black keys to the white keys so that the player does not lose the identity of the white keys.

Moreover, and very important, the connection between the first and third rows of keys are free and noiseless. The provision of the brackets 23 upon the inner ends of the first row of keys 10 and the provision of the pins 26 engaging in the slots 25 is very important. With this arrangement the keys will work noiselessly. The resilient wires 26' or leaf springs will maintain the keys in proper connected positions for all pivoted positions of the keys. All of the keys will depress the same distance and under substantially the same pressures.

While I have illustrated and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:

1. A piano keyboard, comprising a first row of adjacent white keys, a second higher row of spaced groups of two and three black keys, the black keys of each of said groups being adjacent each other and as wide as said white keys and positioned midway between adjacent white keys, and a third row of white keys higher than said second row of black keys and aligned with said first row of white keys, a bracket with a slot mounted on the inner end of each key of said first row of keys, a projecting pin on the inner end of each key of said third row of keys, said projecting pins engaging in said slots for connecting corresponding keys of said first and third rows of keys, a resilient element mounted on the inner end of each key of said third row of keys, and each of said resilient elements engaging upon a different one of said brackets for steadying the pin and bracket connection of corresponding keys of said first and third rows of keys for all pivoted positions of said keys.

2. A piano keyboard, comprising a first row of adjacent white keys, a second higher row of spaced groups of two and three black keys, the black keys of each of said groups being adjacent each other and as wide as said white keys and positioned midway between the adjacent white keys, and a third row of white keys higher than said second row of black keys and aligned with said first row of white keys, a bracket with a slot mounted on the inner end of each key of said first row of keys, a projecting pin on the inner end of each key of said third row of keys, said projecting pins engaging in said slots for connecting corresponding keys of said first and third rows of keys, a resilient element mounted on the inner end of each key of said third row of keys, and each of said resilient elements engaging upon a different one of said brackets for steadying the

pin and bracket connection of corresponding keys of said first and third rows of keys for all pivoted positions of said keys, said resilient elements comprising leaf springs.

3. A piano keyboard, comprising a first row of adjacent white keys, a second higher row of spaced groups of two and three black keys, the black keys of each of said groups being adjacent each other and as wide as said white keys and positioned midway between adjacent white keys, and a third row of white keys higher than said second row of black keys and aligned with said first row of white keys, a bracket with a slot mounted on the inner end of each key of said first row of keys, a projecting pin on the inner end of each key of said third row of keys, said projecting pins engaging in said slots for connecting corresponding keys of said first and third rows of keys, a resilient element mounted on the inner

end of each key of said third row of keys, and each of said resilient elements engaging upon a different one of said brackets for steadying the pin and bracket connection of corresponding keys of said first and third rows of keys for all pivoted positions of said keys, said resilient elements comprising resilient pieces of wire.

JOHN H. REUTHER.

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