April 21, 1931. W. D. GLADSTONE 1,801,422

PERCUSSION MUSICAL INSTRUMENT

Filed July 25, 1930

Fig. 1.

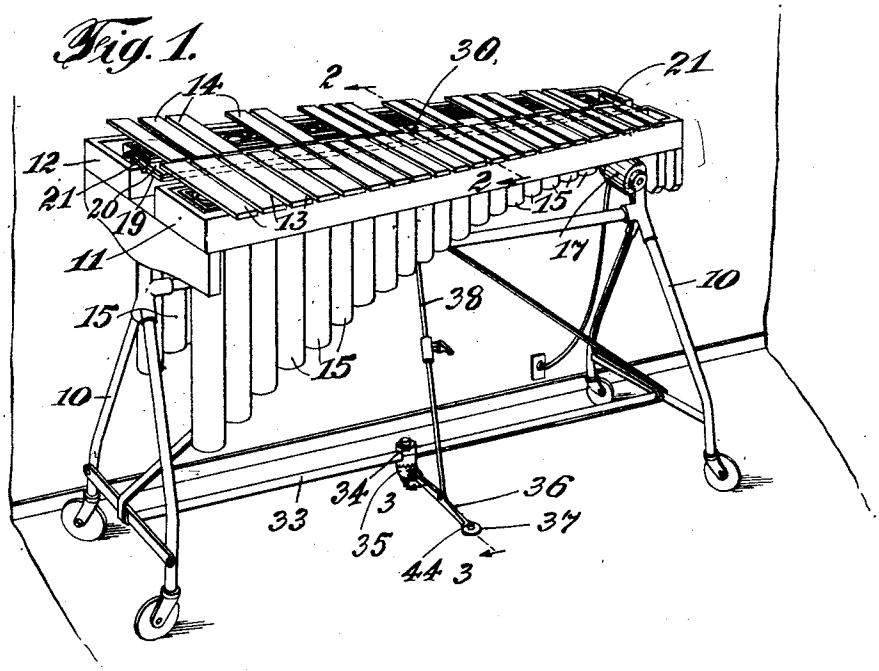


Fig. 2.

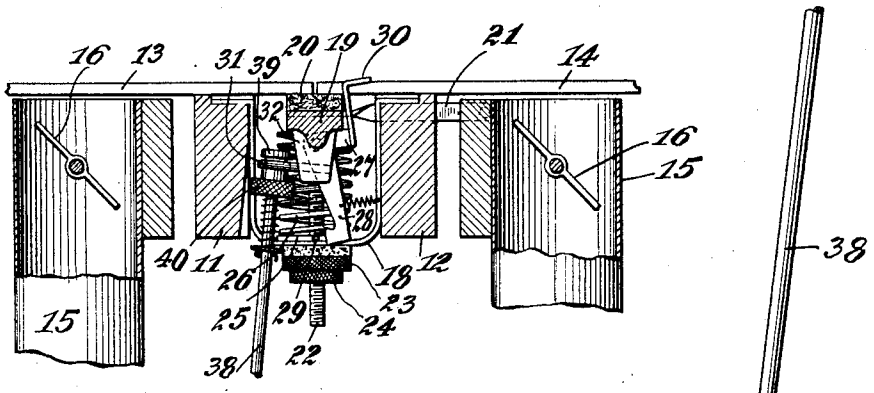


Fig. 3.

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UNITED STATES PATENT OFFICE

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PERCUSSION MUSICAL INSTRUMENT

Application filed July 25, 1930. Serial No. 470,630.

My invention relates to percussion musical instruments and refers particularly to those percussion musical instruments generally known as xylophones.

Later improvements in xylophones, which consist of a plurality of metal plates, or bars, each capable of producing a desired note when struck with a proper instrument, have developed a musical instrument in which a hollow cylindrical resonator is placed beneath each tonal bar with a revolving fan, or pulsator, within each resonator. There is thus produced a much more resonant and a much more sustained note than can be produced by the tonal bars alone.

In order to produce the most desirable tonal effects, it is essential that the resonator-pulsator mechanism be capable of operativeness or in-operativeness quickly and at will and that the tonal bar vibrations be interrupted or dampened, when desired.

It is only by the employment of mechanism which will accomplish these results, that the most desirable tonal effects can be produced.

Because of its rapidity of action, the electric current has been found to be the most efficient operating power for the revolution of the pulsator fans and hence it has been generally adopted for this purpose.

As the musician must have a mallet in each hand in order to play the instrument, it is evident that any electric switch mechanism which requires the use of the hand to make and break the electric circuit, is not well adapted for this purpose.

Further, these instruments are usually a part of orchestra equipment, and the operator thereof has a number of other percussion musical instruments to operate, and hence the means of employing the dampening effect and the resonance effect must be easy, positive and immediate of accomplishment, and, therefore, any means which requires the use of the hands of the musician is highly objectional and a severe handicap to the production of the best musical effects.

My device overcomes all of the above, and other objectionable features of hand operated devices and presents a means whereby the dampening, and undampening of the tonal bars and the operation, and inoperation, of the resonant-pulsator mechanism can be readily and rapidly accomplished by a foot movement of the musician, thus allowing the free and unimpeded use of his hands for the production of the tonal notes.

The numerous advantages of my device will be evident upon a consideration of my specification and its accompanying drawings.

In the accompanying drawings illustrating one form of the device of my invention, similar parts are designated by similar numerals.

Figure 1 is a perspective view of one form of the device of my invention.

Figure 2 is an enlarged section through the line 2—2 of Figure 1.

Figure 3 is an enlarged section through the line 3—3 of Figure 1.

The particular form of the device of my invention shown in the accompanying drawing comprises two uprights 10, 10, upon which are two longitudinal supports 11 and 12, upon which are two series of tonal plates or bars, 13, 14.

A cylindrical-resonator 15 is positioned below each tonal plate and has a revoluble pulsator fan 16 supported therein, said fan 16 being revolved through the medium of an electric motor 17.

Midway of the device, a yoke 18 is supported upon the members 12 and 13. A dampening bar 19, having felt 20 upon the upper face thereof, extends longitudinally of the device beneath the two series of tonal plates and is pivotally supported by an arm 21 at each end thereof.

A fixed shaft 22 extends downwardly from the dampening member 19 through an opening in the lower portion of the yoke 18, the lower end of the rod 22 being threaded to receive the nut 23 and the lock nut 24.

An annular plate 25 is positioned upon the inner face of the yoke 18 and a coil spring 26 is positioned between the plate 25 and the dampening member 19.

A semi-circular collar 27 is pivotally attached to the two ends of a downwardly extended portion of the dampening member 19 and has two downwardly extending arms 28,

28, with a hook end, each capable of receiving the extended pin 29 of the plate 25.

The semi-circular collar 27 also has a longitudinal arm member 30. A hook 31 is fixedly attached to the downwardly extended member 32 of the dampening member 19.

Fixedly attached to the cross bar 33 of the supporting frame is a member 34, the lower portion of which has a plurality of recesses around its periphery.

Revolubly attached to the member 34 is a member 35 having a plurality of upward extensions capable of fitment within the recesses of the member 34.

Pivotally attached to the member 35 is a pedal bar 36 having the extended foot pedal 37. An extendible bar 38 is pivotally attached to the pedal bar 36 and has a head 39 on the upper end thereof, capable of placement upon the upper face of the hook 31, when the bar 38 is within the hook opening. The slidable spring controlled member 40 thus holds the bar in position within the hook 31.

The pedal bar 36 is hollow and carries two electric wires, one of which, 41, is connected with a lower terminal 42 and the other wire 43 is connected with a spring 45 of the push button 44.

The wires 41 and 43 are connected to the electric motor 17 and a source of electric current so that when the spring 45 of the push button 44 is in contact with the plate 42, the motor will be operated.

Insulating material 46 is affixed to the lower surface of the foot pedal 37.

The pivotal movement of the members 34 and 35 with respect to each other, allows the pedal bar 36 to be moved to the right or left to suit the convenience of the musician.

When the device is in normal position, the felt 20 of the dampening bar 19 abuts upon the two series of tonal bars 13 and 14.

When it is desired to increase the resonance of the notes produced by the tonal bars, the foot of the musician is placed upon the push button 44 and moved downwardly, thus contacting the spring 45 and the plate 42, completing the electric circuit energizing the motor 17 and revolving the pulsator fans 16, 16. A further downward movement of the foot against the foot pedal 37, causes a downward movement of the pedal 36 and the dampening bar 19, thus removing the felt 20 from the tonal bars, and allowing full tonal productions from the latter.

When the foot is released from the foot pedal 37, the dampening felt 20 is brought into contact with the tonal bars, the electric circuit is broken and the revolution of the fans 16, 16, is interrupted.

It will thus be seen that a pressure of the foot of the musician starts the revolution of the pulsator fans and removes the dampening member from the tonal bars.

My device, therefore, forces an automatic means whereby the pulsator fans are in operation only when they are needed, that is, when the tonal bars are not dampened, and insures a disconnection of the electric circuit when the device is not in operation.

If, however, it is desired to remove the dampening effect for a period of time without use of the pedal, pedal 36 is pressed downwardly and the pins 29, 29, are placed within the hooks 28, 28, by moving the arm 30. The dampening bar will thus be retained from contact with the tonal bars when pressure upon the pedal is released.

When the device is in this position, the tonal bars may be employed without revolution of the pulsator fans, but if the musician is desirous of increasing the tone volume and resonance, this can be accomplished by foot pressure upon the push button 44, which will revolve the pulsator fans.

This feature of my device allows the musician to employ both the ordinary tones of the tonal bars and the increased resonance thereof by a simple foot movement without causing a movement of the dampening bar.

The simplicity and certainty of the movements of my device in order to produce the above described results, are of the greatest value and importance, as the operators of these musical instruments are usually called upon to play a number of other percussion instruments and hence rapidity of movement is highly desirable and essential.

I do not limit myself to the particular size, shape, number, arrangement or material of parts, as shown and described, as these are given simply as a means for clearly describing the device of my invention.

What I claim is:—

1. In a percussion musical instrument, in combination, a tonal bar, a hollow resonator beneath said bar and spaced therefrom, a revoluble pulsator within said resonator, a dampening member normally abutting upon said bar, pedal means, the downward movement of which will remove said dampening member from abutment with said bar, an electric circuit connecting said pulsator with a source of electric power and means carried by said pedal adapted to make and break said circuit.

2. In a percussion musical instrument in combination, a tonal bar, a hollow resonator beneath said bar and spaced therefrom, a revoluble pulsator within said resonator, a dampening member normally abutting upon said bar, pedal means, the downward movement of which will remove said dampening means from abutment with said bar, an electric circuit connecting said pulsator with a source of electric power and means whereby the upward and downward movement of said pedal will respectively break and make said circuit.

3. In a percussion musical instrument in

combination, a tonal bar, a hollow resonator beneath said bar and spaced therefrom, a revoluble pulsator within said resonator, a dampening member normally abutting upon said bar, pedal means, the downward movement of which will remove said dampening means from abutment with said bar, an electric circuit connecting said pulsator with a source of electric power and a switch carried by said pedal, the movement of said switch making and breaking said circuit.

4. In a percussion musical instrument, in combination, a tonal bar, a hollow resonator beneath said bar and spaced therefrom, a revoluble pulsator within said resonator, a dampening member normally abutting upon said bar, pedal means, the downward movement of which will remove said dampening means from abutment with said bar, an electric circut connecting said pulsator with a source of electric power and a switch carried by said pedal and extending above the upper face thereof, a downward pressure of said extended switch member being adapted to make said circuit and revolve said pulsator.

Signed at New York city in the county of New York and State of New York this 24th day of July, 1930.

WILLIAM D. GLADSTONE.