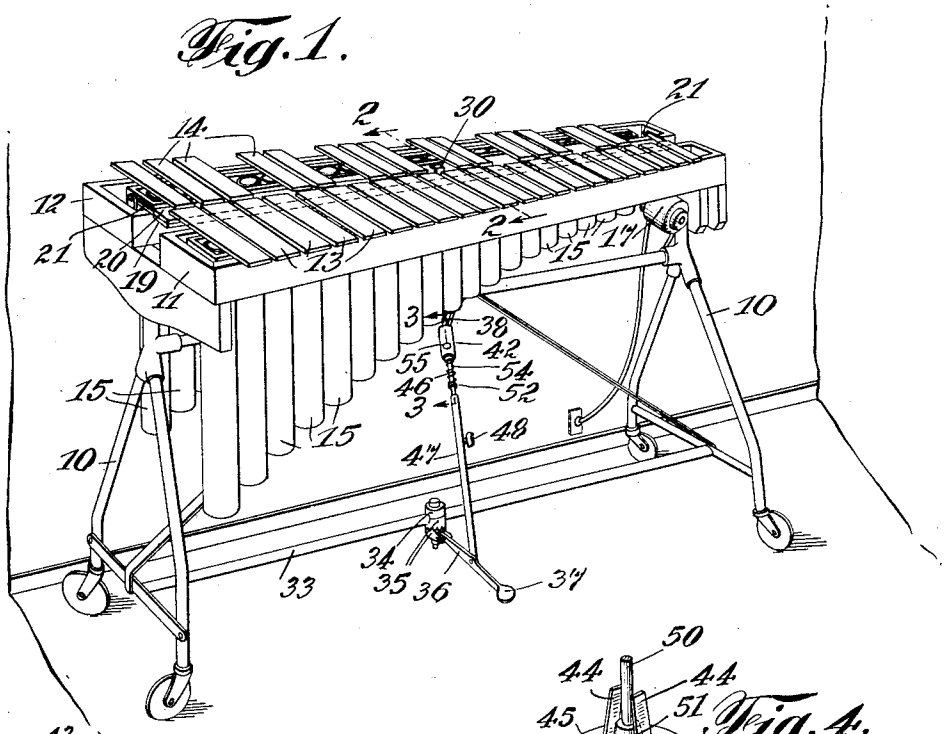
Feb. 2, 1932. W. D. GLADSTONE 1,843,553

PERCUSSION MUSICAL INSTRUMENT

Filed Aug. 25, 1930

Fig. 1.



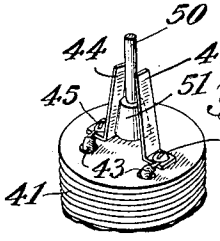


Fig. 4.

Fig. 3.

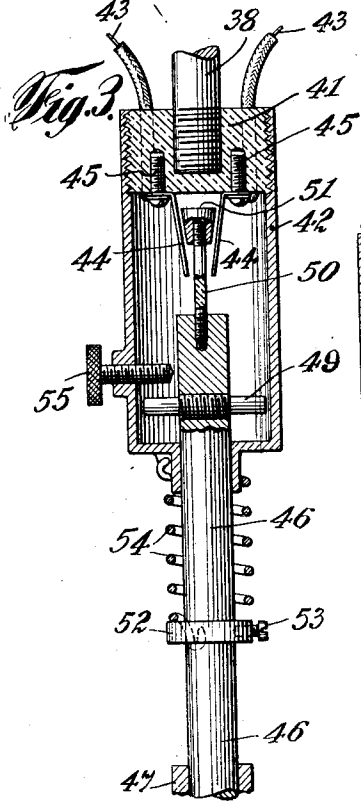
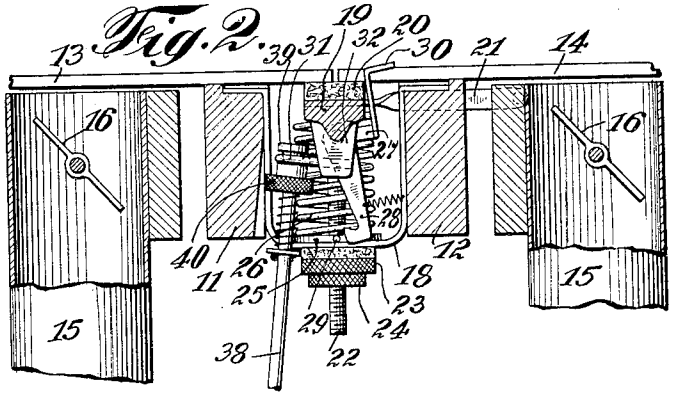


Fig. 2.



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Patented Feb. 2, 1932 1,843,553

UNITED STATES PATENT OFFICE

WILLIAM D. GLADSTONE, OF NEW YORK, N. Y.

PERCUSSION MUSICAL INSTRUMENT

Application filed August 25, 1930. Serial No. 477,551.

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 damped, 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 damping effects 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 objectionable 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 damping, and undamping 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.

Figure 4 is an enlarged inverted perspective view of the electrical make and break device shown in Figure 3.

The particular form of the device of my invention shown in the accompanying drawings 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 11 and 12. A damping bar 19, having felt 20 upon the upper face thereof, extends longitudinally of the device beneath 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 damping 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.

A semi-circular collar 27 is pivotally attached to the two ends of a downwardly extended portion of the damping member 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 damping member 18.

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 30 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. A bar 38 has a head 39 in 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.

A plug 41 of electric insulated material is threaded within one end of the tube, or casing, 42, the lower end of the bar 38 being threaded within the plug 41. Two electric wires 43.43, connected to a source of electric current, not shown, pass through the plug 41 each being attached to a contact plate 44 maintained to the plug 41 by means of a screw 45.

A bar 46 is slidable through an opening in the bottom of the casing 42 and is telescoped within the tube 47, which is pivotally attached to the pedal bar 36, the bar 46 and the tube 47 being maintained in positions relative to each other by means of the set-screw 48, threaded within the bar 46 and within the casing 42 is a bar 49, limiting the downward movement of the bar 46.

A bar 50 of electric insulating material is threaded within the upper end of the bar 46 and carries a cap 51 of electric conducting material, capable of abutment upon, and spacement from the contact plates 44.44.

A collar 52 capable of movement along the bar 46 is maintained in position by the set-screw 53, and a spring 54, fixedly attached to the collar 52, and the bottom of the casing 42 normally tends to maintain the bar 46 in an inward position, in which the cap 51 and the contact plates 44.44 are not in abutment.

A set-screw 55 is threaded within an opening in the casing 42, and is capable of abutting upon the bar 46.

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 damping bar 19, abuts upon the two series of tonal bars 13 and 14.

The operation of the device is as follows:—

When it is desired to play the instrument, the foot of the musician is placed upon the foot pedal 37 and pressed downwardly. This movement drawing the bars 47, 46 and 38 downwardly, removing the damping member from abutment upon the tonal bars and drawing the cap 51 into abutment with the contact plates 44.44 completing the electric circuit and causing the revolution of the pulsators.

It will be noted that the casing 42 and the bar 38, releasing the damping member, will not be drawn downwardly until the bar 49 abuts upon the bottom of the casing, and that hence, the bar 50 may be so positioned that either the damping member will be removed from abutment with the tonal bars before the completion of electric contact and the operation of the pulsators, or the pulsators may be put into operation before the damping member is released from such abutment. It is evident that if the resiliency of the spring 54 is greater than that of spring 40, the damping bar 19 will be removed from abutment upon the tonal bars 13, 14 before contact between the contact plate 44 and the bar 50. If, however, the resiliency of the spring 54 is less than that of spring 40, the contact plate 44 and the bar 50 will abut upon each other before the damping bar 19 is removed from contact with the tonal bars 13, 14. This is a valuable feature of the device.

When the foot is removed from the foot pedal, the device returns to its original position with the tonal bars damped and the pulsators motionless.

If it is desired to maintain the pulsators in operative position without use of the foot pedal, the bar 46 is drawn downwardly until the cap 51 and the contact plates 44.44 are in abutment and this position maintained by means of the set-screw 55.

As some musicians prefer to have the normal position of the foot pedal a greater or less distance from the floor, it is evident that some readily accessible means should be employed to co-ordinate the contacting of the electric circuit elements under such varying conditions, and this is accomplished by means of the telescopic members 46 and 47. By the means described, the distance of the foot pedal 37 from the floor may be varied without interfering with the relative positions of the cap 51 and the contact plates 44.44.

It will thus be seen that my device presents an effective means for accomplishing the described and desirable results by the simple movement of a pedal 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric power and a pedal, the movement of which will remove said damping member from abutment with said bar and cause the completion of the electric circuit, causing a revolution of said pulsator.

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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric power a pedal the downward movement of which will remove said damping member from abutment with said bar and cause the completion of the electric circuit, causing a revolution of said pulsator, and means returning said pedal to its normal position when pressure is removed therefrom.

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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric power, a pedal, the movement of which will remove said damping member from abutment with said bar and cause the completion of the electric circuit, causing a revolution of said pulsator and means whereby the normal position of said pedal may be varied without varying the normal relative positions of the contact elements of said electric 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric power, a pedal, the movement of which will remove said damping member from abutment with said bar and cause the completion of the electric circuit, causing a revolution of said pulsator, means whereby the vertical position of said pedal may be varied without varying the normal relative positions of the contact elements of said electric circuit and means returning said pedal to its normal position when pressure is removed therefrom.

5. 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric power, a vertically movable pedal, means connected to said pedal, the downward movement of which will release said damping means from abutment with said bar, electric make and break means carried by said connecting means and within said electric circuit, means whereby the downward movement of said pedal will make said circuit and means whereby the normal position of said pedal will break said circuit, the making of said circuit causing a revolution of said pulsator.

6. 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric power, a vertically movable pedal, means connected to said pedal, the downward movement of which will release said damping means from abutment with said bar, electric make and break means carried by said connecting means and within said electric circuit, means whereby the downward movement of said pedal will make said circuit, means whereby the normal position of said pedal will break said circuit, the making of said circuit causing a revolution of said pulsator and means whereby the normal position of said pedal may be varied without varying the normal relative positions of the contact elements of the said electric circuit.

7. 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric power, a vertically movable pedal, a tube pivotally attached to said pedal, a bar telescopic within said tube, means for maintaining said bar in said tube in predetermined positions, an electric contact member carried by said bar, a second bar connected to said damping member, the termini of the electric wires of said circuit being carried by said second bar, the elements being so positioned that the downward movement of the first bar will cause its contact member to abut upon the wire termini contacts and the upward movement of the first bar into normal position will break said contact, the making of said circuit causing a revolution of said pulsator.

8. 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

damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric current, a pedal, and means whereby a movement of said pedal will first remove said damping member from abutment upon said tonal bar, a continuous further movement of said pedal causing a completion of the electric circuit, causing a revolution of said pulsator.

9. 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric current, a pedal, means whereby a movement of said pedal will first remove said damping member from abutment upon said tonal bar, a continuous further movement of said pedal causing a completion of the electric circuit causing a revolution of said pulsator and means returning said pedal to its normal position when pressure is removed therefrom.

10. 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric current, a pedal, means whereby a movement of said pedal will first remove said damping member from abutment upon said tonal bar, a continuous further movement of said pedal causing a completion of the electric circuit causing a revolution of said pulsator and means whereby a different movement of said pedal will first break said circuit and then return said damping member to abutment with said bar.

11. 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric current, a pedal, means whereby a movement of said pedal will first remove said damping member from abutment upon said tonal bar, a continuous further movement of said pedal causing a completion of the electric circuit causing a revolution of said pulsator, means whereby a different movement of said pedal will first break said circuit and then return said damping member to abutment with said bar and means returning said pedal to its normal position when pressure is removed therefrom.

12. 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric current, a pedal, means whereby a movement of said pedal will first remove said damping member from abutment upon said tonal bar, a continuous further movement of said pedal causing a completion of the electric circuit causing a revolution of said pulsator and means whereby the normal position of said pedal may be varied without varying the normal relative positions of the contact elements of said electric circuit.

13. 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric current, a pedal, means whereby a movement of said pedal will first remove said damping member from abutment upon said tonal bar, a continuous further movement of said pedal causing a completion of the electric circuit causing a revolution of said pulsator, means returning said pedal to its normal position when pressure is removed therefrom and means whereby the normal position of said pedal may be varied without varying the normal relative positions of the contact elements of said electric circuit.

14. 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric current, a pedal, means whereby a movement of said pedal will first remove said damping member from abutment upon said tonal bar, a continuous further movement of said pedal causing a completion of the electric circuit causing a revolution of said pulsator, means whereby a different movement of said pedal will first break said circuit and then return said damping member to abutment with said bar, and means whereby the normal position of said pedal may be varied without varying the normal relative positions of the contact elements of said electric circuit.

15. 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 damping member normally abutting upon said bar, an electric circuit connecting said pulsator with a source of electric current, a pedal, means whereby a movement of said pedal will first remove said damping member from abutment upon said tonal bar, a continuous further movement of said pedal causing a completion of the electric circuit

causing a revolution of said pulsator, means whereby a different movement of said pedal will first break said circuit and then return said damping member to abutment with said bar, means returning said pedal to its normal position when pressure is removed therefrom and means whereby the normal position of said pedal may be varied without varying the normal relative positions of the contact elements of said electric circuit.

Signed at New York city, in the county of New York and State of New York, this 21st day of August, 1930.

WILLIAM D. GLADSTONE.