MUSICAL CONTROL DEVICE

This invention relates to a device for receiving musical intelligence from a first instrument and transmitting this intelligence to a plurality of musical instruments so that they may be remotely operated, and the invention relates more particularly to such a device in the form of a harmonica by which complete orchestration is provided.

Prior to the instant invention, there have been several proposals by which one instrument could cause several other instruments to play particular melodies in unison; for the most part such equipment has been costly and has been limited to sending instruments of the percussion or striking type. This invention, however, directs itself toward providing a means within a harmonica-like housing which provides an electrical impulse signal responsive to the note selected by the harmonica player as a result of his blowing or sucking within a particular note passageway. Therefore, a principal objective of the invention is to provide a device which is suitable for controlling other musical instruments by way of an uncomplicated, small, harmonica-like device.

A further objective of this invention is to provide a novel switching means which efficiently develops such a signal responsive to air flow within the harmonica passages.

Another objective of the invention is to provide a novel, wind-activated, switching assembly to control remote pieces of apparatus.

Another important objective of the invention is to provide a light-weight type instrument which is played by mouth and which will develop impulse intelligence which can be utilized to play other instruments such as wind, string, and percussion instruments.

These and other important objectives and advantages of the invention will be apparent from the following description, wherein reference is made to the accompanying drawings illustrating a presently preferred embodiment of the invention, and wherein:

FIGURE 1 is a front elevation of the harmonica-like device;

FIGURE 2 is a sectional view taken on line 2—2 of FIG. 1; and

FIGURE 3 is a schematic wiring diagram.

Briefly stated, the embodiment described herein is comprised of a harmonica housing having a series of note passageways and in which there is included a two-pole switch. The switch within each passageway is activated by the blowing or drawing of air therethrough in conventional harmonica playing fashion.

Within the harmonica housing there is a terminal strip chamber by which the particular notes, as chosen by the particular passageway and direction through which air is transmitted, are transferred to a plurality of cables that signal the operation of other instruments. The invention is specifically related toward the method of detecting and transmitting the musical intelligence, rather than the utilization of this intelligence by the receiving equipment. Those skilled in the art will readily appreciate that the intelligence, as transmitted by this invention, can be utilized with remotely controlled orchestral systems such as those taught by the U.S. patent to W. R. Corbett, Number 1,688,450, issued on October 23, 1928.

For ease of understanding, the embodiment described takes the form of the simplest of harmonicas. It should be understood that chromatic and other more sophisticated instruments are readily adapted for use with the principles described herein.

Referring now particularly to the drawings wherein like numerals indicate like elements, the numeral 10 is the harmonica-like instrument of this invention. The instrument described, although not a music maker in itself, is played like conventional harmonicas. In fact, with only minor changes, the structure described, can be manufactured as an extension to a harmonica such that music may be obtained therefrom, in addition to that from the remote pieces.

The instrument is comprised of a fiber member 12 through which a plurality of elongated passageways 14 are formed. Attached to the upper and lower surfaces of the fiber member are a pair of metallic casings 16 and 18. These casings are preferably fiber-lined as depicted by the numeral 19. The fiber lining electrically insulates the interior of the unit from the hands of a player. At the lower rear portion of the unit is a chamber 20. Chamber 20 houses an electrical control and attachment center which is described more in detail hereinafter.

The passageways 14 each represent two particular musical notes within a particular octave grouping. As is well known in the standard harmonica, one note is played when air is blown in a first direction, and a second note is played upon a withdrawing or sucking of air in the other direction. In order to electrically represent these respective notes, a switch assembly 22 is housed within each of the passageways 14. For operational purposes, each passageway and switch assembly are identical. Therefore, only one unit is described, it being understood that the description applies to all.

The switch assembly is supported within each chamber by way of a pair of non-conducting rubber or plastic spacing members 24 and 26. Supported by the lower ends of each spacing member are two leaf-like electrical arms 27 and 28, respectively having contact points 30 and 32 at their ends. Spaced vertically above arm 27 is a leaf-spring contact arm 34 having a contact point 36 opposing contact point 30, and having a downwardly turned baffle 38 adjacent the forward opening of its associated passageway 14. By an inspection of FIG. 2, it can be seen that air blown in the direction of arrow A will cause contact point 36 to engage contact point 30. Supported within spacing elements 26 is a leaf-spring element 40 having a contact 42 opposing contact 32 and with a downturned baffle 44 adjacent the rear opening of passageway 14. By inspection, it can be seen that air traveling in the direction of arrow B will cause contact 42 to engage contact 32. All contacts are normally open, as determined by the natural resiliency and spacing of their respective arms. The spacing elements are laterally quite narrow and represent only a portion of the lateral width of each of the passageways. This permits free flow of air throughout the entire passageway. Therefore, an air flow which causes contact 36 to engage contact 30 will have a tendency to maintain contact 42 out of engagement with contact 32.

Power for the system enters the unit through a power cord 50 and a transformer 52 such that a D.C. potential is applied to a bus bar or the like 54. The elongated bus bar is housed in chamber 20 and extends substantially throughout the length of the chamber and provides
the desired potential to the contact points 30 and 32 in every passageway. Also enclosed within chamber 20 is a terminal strip 68, to which each of the arms 34 and 40 are connected by way of leads 62 and 64.

Leading from the chamber 20 are a plurality of multiwire cables 66, 68, and 70. Each wire of each cable is an insulated conduit and corresponds to one of the contact points 36 and 42 of the switch mechanisms. Therefore, each of the cables 66, 68, and 70 would be of a 20 wire type; since (in the harmonica device disclosed) there are 10 passageways. As illustrated schematically in FIG. 3, each terminal point, for instance 36, is electrically connected to a particular wire within each of the cables. Although only three cables are shown, the number of cables is immaterial, and is limited only by the number of remotely operated instruments.

Attached to the other ends of each of the cables is a remotely controlled instrument, such as a reed, wind, or percussion type instrument. The music intelligence and timing gathered from the individual switching means is then utilized in a suitable manner such as that disclosed in the previously mentioned Corbett reference. The invention also provides means by which the remote instruments can be alternately and concurrently selected during a particular rendition. A series of selection buttons 72, each having a “yes” path and a “no” blocking path are mounted to the instrument and are respectively ganged across the cables 66, 68, and 70. Therefore, any combination of I, II, and III instruments could be played or not played during certain passages.

In operation, the unit 10 is connected to its electrical source and to the pieces which are remotely controlled. As the musician chooses his passageway and direction of air flow, the respective contacts are made to open and close according to the tempo and musical pattern of the selection being played. The remotely controlled instruments then function similarly, depending on their various individual operating requirements. The instruments, I, II, and III can be brought in or left out as selected by buttons 72.

In a general manner, while there has been disclosed in the above description, what is deemed to be the most practical and efficient embodiment of the invention, it should be well understood that the invention is not limited to such an embodiment, as there might be changes made in the arrangement, disposition, and form of the parts without departing from the principle of the present invention as comprehended within the scope of the accompanying claim.

I claim:

A mechanism for remotely controlling several musical instruments activated by an electrical impulse pattern comprising, a hand instrument housing having a first number of elongated passages therethrough, a terminal strip in said housing having a series of electrical cables corresponding in number to said first number of passages and extending to each one of said remotely controlled devices, a switch having first and second contact points housed within each of said passages, and connected to a particular line of each of said cables, an electrical potential at each of said contact points, each said switch including a first baffle responsive to air moving in one longitudinal direction of its associated passage to connect the potential at said first contact point to said first lead line and a second baffle responsive to air moving in the opposite longitudinal direction to connect the potential at said second contact point to said second lead line, and a plurality of interrupter switches in said housing for selectively breaking the electrical continuity of said cables, an operator controlled switch connected to each of said interrupter switches and extending to a point outside of said housing.

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