ELECTRONIC ORGAN VOICING CONTROL MOUNTED ON VOICE TAB

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ABSTRACT
A tone quality control for an electronic organ which is carried on the voice tab which controls a respective voice of the organ. The control includes an adjustable resistor, or rheostat, adjustable for varying a quality of the sound pertaining to the respective voice, such as the volume thereof. The control is advantageously carried on the underside of the tab pertaining to the respective voice and can readily be adjusted by the organ player to control the quality of the voice to which the adjustment pertains.

6 Claims, 10 Drawing Figures
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The present invention relates to electronic organs and is particularly concerned with a novel arrangement for adjusting the quality of at least one voice of the organ.

Electronic organs are, of course, well known and include, in addition to the playing keys and tone generator, a plurality of voice circuits which, when effective, modify the output of the tone generator to produce a sound peculiar to the respective voice circuit. In a conventional organ, voice tabs are provided which are operable to open and close switches connected in circuit with the respective circuit components making up the voice circuits which modify the output from the tone generator and, thus, merely accomplish the turning on and turning off of the respective voice of the organ. All volume adjustments, and the like, in the conventional organ are made in respect of the total organ output, or in respect of the output of the respective keyboards thereof.

It is often the case, however, that an organ player could, to advantage, have a certain voice, or voices, sound more strongly than other voices in order to obtain a desired effect, or to bring out a voice simulating a particular instrument, such as a violin, more strongly than the other voices to create the effect of a solo instrument. Further, it might be desired to vary a quality other than the volume of a respective voice, such as the timbre of a trumpet, or the like. With conventional electronic organs, such individual adjustment of respective voices has not heretofore been possible.

With the foregoing in mind, a primary objective of the present invention is the provision of an arrangement for individually adjusting at least one quality of one or more of the several voices of an electronic organ.

A further object is the provision of an adjustable element operable for adjusting a quality of a respective voice of an electronic organ and which is carried by the tab pertaining to the respective voice.

Still another object of the present invention is the provision of a tab mounted adjusting element for an organ which is substantially concealed but which is readily operable by the organ player.

The foregoing objects of the present invention as well as still other objects and advantages thereof become more apparent upon reference to the following detailed specification taken in connection with the accompanying drawings, in which:

FIG. 1 is a fragmentary perspective view showing a typical tab for an electronic organ for controlling a respective voice thereof.

FIG. 2 is a vertical sectional view, indicated by line II—II on FIG. 1, showing the tab from the side thereof and the manner in which it is mounted in the case of the organ.

FIG. 3 is a schematic view showing the voicing circuit pertaining to the tab and the manner in which the voicing circuit is controlled by the tab.

FIG. 4 is a perspective view showing the adjustable arrangement carried by the underside of the tab, looking down from the top thereof.

FIG. 5 is a view similar to FIG. 4, but looking up from the bottom of the adjustable arrangement.

FIG. 6 is a sectional view indicated by line VI—VI on FIG. 2 and showing the manner in which the adjustable arrangement is mounted on the underside of the tab.

FIG. 7 is a fragmentary view showing a modified arrangement of the adjustable device carried by the tab.

FIG. 8 is a view showing a more or less conventional switch to be operated by the tab when the adjustable device of FIG. 7 is mounted thereon.

FIG. 9 is a schematic circuit representation of an organ voicing circuit and the control arrangement therefor according to the modification of FIGS. 7 and 8.

FIG. 10 is a somewhat schematic perspective view showing the manner in which the adjustable element on the tab could be so arranged that the adjusted position thereof could readily be discernable by the organ player.

BRIEF SUMMARY OF THE INVENTION

According to the present invention, a control element, such as a rheostat, or resistor arrangement, is provided which is connected in the voicing circuit of the organ and is adjustable for varying the level of the output from the voicing circuit, or for varying some other quality of the sound that results when the respective voicing circuit is active. Advantageously, the rheostat, or resistor arrangement, is a somewhat elongated device having a slider thereon, and is adapted for mounting on the underside of the respective voice tab and has electrical connections leading thereto from the inner end of the tab so that, normally, the rheostat, or resistor arrangement, and the slider element thereof are concealed from view but are, nevertheless, readily accessible to the organ player.

In one modification, the slider of the rheostat, or resistor arrangement, is provided with an extension which may extend completely around the respective tab so that the position thereof can be determined merely by glancing at the tab.

DETAILED DESCRIPTION

Referring to the drawings somewhat more in detail, in FIG. 1, 10 represents a portion of an organ case, for example, the portion thereof upstanding behind the keyboard of the upper manual. It is conventional for this portion of the organ case to contain a plurality of tabs, one of which is shown at 12 in FIG. 1. These tabs control switches that make respective voicing circuits of the organ effective or ineffective. In FIG. 1, only one such tab is shown, but it will be understood that the usual organ comprises a group of the tabs for the upper manual, a further group of tabs for the lower manual and a still further group for the pedal clavier.

According to the present invention, the tab 12, which is pivoted on portion 10 of the organ as by a pivot shaft 14 and is under the control of an over center spring 16, has a recess 18 formed in the bottom thereof into which is inserted a rheostat, or resistor arrangement, generally indicated at 20, and which comprises a finger adjustable slider 22.

The rheostat, or resistor arrangement, provides, in one modification of the invention, a volume adjustment whereby the strength of a respective voice can be adjusted. In another modification of the invention, the rheostat, or resistor arrangement, changes another
quality of the respective voice and which change may or may not be associated with a change in volume of the voice.

In the case of the first mentioned modification, FIG. 3 schematically illustrates the pertaining circuitry. In FIG. 3, the element indicated at 24 is a voicing circuit to which signals are supplied from the tone generator of the organ via an input wire 26. The output wire 28 leading from the voicing circuit passes through the back of the tab via a bore 30 provided therefor, as will be seen in FIG. 2, and is connected to one end of the rheostat, or resistor arrangement 20, as shown in FIG. 3.

The other terminal leading from the arrangement 20 leads to a contact 32 adapted for closing on a second contact 34 when the tab is moved downwardly to effective position. Contact 34 is connected by a wire 36 with the amplifying system of the organ so that, when tab 12 is in its tilted down position, the voicing circuit at 24 is effective for supplying signals to the output system of the organ. FIG. 3 will also show that the element 22 is operable for adjusting the effective ohmic value of the device 20.

Turning now to FIGS. 4 and 5, arrangement, or device, 20 will be seen to comprise an electrical insulating body part 40 having a longitudinal slot 42 formed therein through which slot the finger adjustable slider element 22 extends. On the upper side of body 40 there is arranged a metal strip 44 and an elongated resistance element 46. Wire 28 connects to one end of metal strip 44 as, for example, by the one end of the metal strip being wrapped around the end of body 40, as shown in FIG. 5, and soldered to the wire.

The slider element 22 comprises a generally rectangular portion 48 on top of body 40 which has a metal frame 41 on the underside which includes the resilient contact fingers 50 which slide on metal strip 44 and on the strip 46 of resistance material. Portion 48 is confined between the upper side of body 40 and the bottom of the recess in the underside of tab 12 whereby contact fingers 50 are resiliently pressed against strip 44 and resistance element 46.

On the underside of body 40, as will be seen in FIG. 5, is another metal strip forming the aforementioned contact 32 which is adapted to close on switch contact 34 when the tab is moved downwardly. Contact strip 32 is in electrical contact with one end of resistance element 46 as by forming one end of strip 32 around the end of body 40, as indicated at 52 and making connections with the one extreme end of resistance element 46. It will be apparent from the foregoing description that the resistance between incoming wire 28 and outgoing contact strip 32 is readily adjustable by the player by moving the slider element 22 along slot 42 and that the volume of the pertaining organ voice will be varied accordingly.

In the modifications of FIGS. 7, 8 and 9 the on-off switch function controlled by the tab, and the adjustable control of a quality of the voice of the voicing circuit controlled by the respective tab are separated. The resistance device in FIG. 7 merely comprises the insulating body 60 with two strips 62 and 64 mounted thereon and bridged by a slider element 66 with separate wires 68 and 70 leading from one end of the strips. Either one or both of the strips, in the FIG. 7 modification, can be resistance material. The tab in this modification controls a switch 72 illustrated in FIG. 8, and which will be seen to comprise a pair of contacts which close when the tab is depressed and which separate when the tab is moved upwardly. Switch 72 in FIG. 8 is merely an on-off switch and serves merely to determine whether or not the respective voicing circuit is connected with the output circuitry of the organ.

A typical circuit for utilizing the arrangement of FIGS. 7 and 8 is shown in FIG. 9. In FIG. 9, 74 is an input wire and is connected to one side of a capacitor 76, the other side of which is connected with one end of resistor 78, the other end of which is connected to ground via induction coil 80, and also to one side of a capacitor 82, the other side of which is connected via the resistor device 84 with ground. The resistor device 84, with its slider, is the resistance device which is illustrated in FIG. 7.

The end of resistor 78 opposite capacitor 76 is also connected to one end of resistor 86, the other end of which is connected to one side of a capacitor 88, the other side of which is connected via a resistor 90 to ground, and also to one side of a resistor 92, which, on its other side, is connected to one terminal of the tab controlled switch 72 of FIG. 8.

When the slider element 66 in FIG. 7 is adjusted, thereby to change the value of the resistance between the capacitor 82 and ground, the character of the voice supplied through switch 72 is varied. For example, the particular voicing circuit shown in FIG. 9 is for a trumpet and the input to the circuit via wire 74 is a basic tone, rich in harmonics, such as a saw tooth wave. Adjustment of the slider along resistor 84 will change the resonant frequency of the tank circuit fed by the aforementioned basic tone, and the tone supplied to the organ output system via switch 72 can thereby be modified to get a somewhat flat, or muted, trumpet effect, as opposed to the usual rather hollow sound of a trumpet.

It will be understood that the circuit of FIG. 9 is supplied merely to illustrate the applicability of the present invention to the controlling of a quality of the voice pertaining to a respective tab other than the volume thereof. Thus, in the appended claims the term "quality" is used with relatively broad connotations, and is intended to include not only the volume but other characteristics of the respective voice, as well.

FIG. 10 shows a tab 100 having an adjusting arrangement mounted thereon and wherein the slider 102 of the arrangement is constructed and arranged to be visible from above the tab, as by wrapping partly or completely, around the tab.

Modifications may be made within the scope of the appended claims.

What is claimed is:

1. In an electronic musical instrument; voicing circuit means having input and output terminals and operable when a tone signal is supplied to the input terminal thereof to supply an output signal at the said output terminal having the same pitch as said tone signal but modified as to wave form, switch means serially connected to said voicing circuit means and having a first closed position wherein the respective voicing circuit means is effective and a second open position wherein the respective voicing circuit means is ineffective, a tab connected to said switch means for the selec-
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tive manual actuation thereof, electrical component means connected in circuit with said voicing circuit means and operable for influencing a quality of the tone signal produced at the output terminal of the voicing circuit means when the switch means pertaining thereto is in the said first position thereof and a tone signal is supplied to the input terminal thereof, said component comprising an element adjustable to vary the electrical characteristics of the component, and manually adjustable means carried directly on said tab and connected to said element and being selectively moveable for adjusting the said element of said component means thereby to vary the said quality of the said sound produced by the said voicing circuit means.

2. An electronic musical instrument according to claim 1 in which said adjustable means is in the form of a slider carried on the respective tab and moveable in the direction of the length of the tab to effect adjustment of said element.

3. An electronic musical instrument according to claim 2 in which the said slider is carried on the underneath side of the said tab.

4. An electronic musical instrument according to claim 2 in which the said component means comprises variable resistance means and said element is a contact moveable along the resistance means, said slider being connected to said element.

5. An electronic musical instrument according to claim 1 in which said component means comprises resistance means and in which the said quality of the sound is the volume thereof.

6. An electronic musical instrument according to claim 2 in which said slider and tab having cooperating elements visible from above the tab whereby the player of the instrument can readily observe the adjusted position of the said slider on the said tab.

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