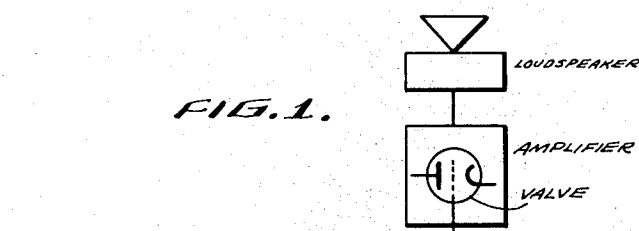
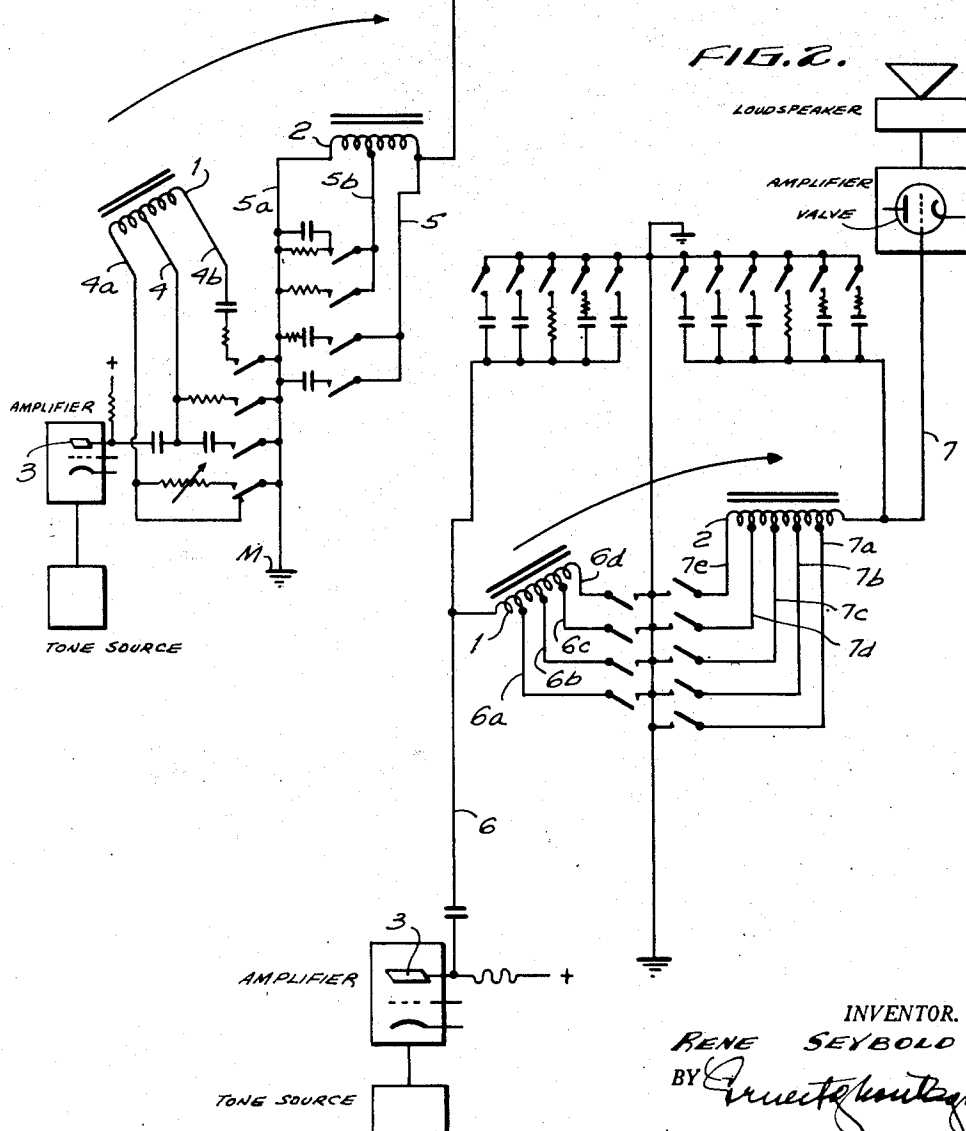


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MEANS FOR CONTROLLING THE TONE QUALITY AND TONE
VOLUME OF ELECTRICAL MUSICAL INSTRUMENTS
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MEANS FOR CONTROLLING THE TONE QUALITY
AND TONE VOLUME OF ELECTRICAL MUSICAL
INSTRUMENTS

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3 Claims. (Cl. 179—171)

This invention relates to electrical musical instruments in which fundamental oscillations are led to a sound reproducing device.

One object of the invention is to provide an improved musical instrument, taking into consideration the strength of the sound and the emphasis of individual notes and simultaneously the tone.

According to the invention such an electrical instrument is provided with an induction coupling inserted in the transmission circuit, the coupling coils being provided with tappings as desired and being adjustable in position relatively to one another. Preferably the coils and/or tapped-off parts of the coils can be adjusted as desired in their oscillatory characteristics. In a particularly advantageous construction for the adjustment of a particular range of regulation in the oscillation circuit of one or the other coupling coil a variable resistance is switched in and controlled simultaneously with the individual means for moving the coupling coils. The coils or tapped-off parts of the coils can be adjusted as desired in their oscillatory characteristics by means of electrical elements which can be switched into the circuits. Advantageously control members, for example push buttons or pedals, are employed for switching in and out and combining said elements and so changing the characteristics of the oscillations of the various circuits. The above-mentioned features and further features of the invention are to be perceived from the following description of instruments according to the invention read in conjunction with the following claims.

In the accompanying drawings two arrangements according to the invention are illustrated by way of example, both Figure 1 and Figure 2 being wiring diagrams of parts of the circuits of musical instruments in which the invention is embodied.

Referring to Figure 1, there is shown a diagram of the wiring of only that part of the musical instrument with which the invention is concerned, namely the arrangement for the simultaneous regulation of the strength and tone of the note. The manner in which the tone is produced is not further described as this can be done in any conventional manner, that is with the oscillations of a mechanical sound producer being translated into electrical oscillations or electrical oscillations being generated directly, preferably in such form that oscillations with great wealth of overtones are produced. Likewise the transmission of the oscillations through an amplifier to a loudspeaker or the like is not described in detail, nor is the amplifier fully described. In the transmission circuit is inserted an induction coupling consisting of two coils 1 and 2 of which the first is adjustable and the second is stationary. The coil 1 is connected to the anode 3 of a preceding amplifying valve. The input coil 1 has two end connections and a middle tapping. These three connections are connected by three leads 4, 4a and 4b through any desired form of switch to a common earth M. Likewise the output coil 2 has three connections 5, 5a, and 5b which are similarly connectable through switches to the common earth M. The arrangement of the input coil 1 is so chosen that the entering current passes through the middle tapping and the two end connections lead to the circuits determining the character of the sound. These circuits are in the case of the lead 4a through a resistance and in the case of the lead 4b through a series arrangement of a condenser and resistance. The lead 4a can also be connected directly to the earth M with the switching arrangement illustrated. Also the middle lead 4 can be connected to the common earth M through either a resistance or a condenser. The secondary coil 2 has an output lead 5 connected to the grid of a subsequent amplifying valve and is directly connected to the end of

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the coil 2, a switch being provided so that the output lead and the end of the coil 2 can be connected to the common earth M through a condenser by means of a switch or through a series arrangement of condenser and resistance by means of a second switch. The other end of the coil 2 is permanently connected to the common earth M. A central tapping 5b of the coil 2 has two switches, by the first of which it can be connected through a parallel arrangement of a resistance and condenser to the common earth and by the second of which it can be connected through a resistance to the common earth.

Referring to Figure 2, a modified circuit is shown in which the two coils 1 and 2 again appear, the anode 3 being connected through an input lead 6 to one end of the coil 1, which however is provided with a large number of tappings 6a, 6b, 6c and so on. Similarly the output coil 2 has an output lead 7 connected to its end and has a large number of tappings 7a, 7b, 7c and so on. The tappings of both coils can by means of switches be connected as desired directly to the common earth. It is possible to combine numerous ranges of regulations with an equal number of degrees of intensity for every unchanged circuit of the coupling coils. Switches are arranged between the coil input and the common earth M whereby a great number of combinations is made possible.

From Figures 1 and 2 it appears that for the completion of the circuit there are numerous possibilities. In this manner the switching in of various circuits on either the input side or on the output side is possible in accordance with requirements, these different circuits on both sides being capable of combination with one another in the most varied manner. In consequence of the different characteristics of the circuits and combinations a large number of different tones and qualities of the sounds and notes can be produced.

I claim:

1. In a transmission circuit for an electrical musical instrument including an amplifier, an adjustable inductive coupling and a sound reproducer, in which the electrical tone frequencies are fed from the said amplifier to the said sound reproducer and in which the said tone frequencies are fed through the said adjustable inductive coupling, the improvement comprising a primary coil and a secondary coil, the said coils constituting the said adjustable inductive coupling, means for moving one of the said coils relative to the other of the said coils, a first valve and a second valve, the said primary coil being connected with the anode of the said first valve and the said secondary coil being connected with the grid of the said second valve, each of the said coils having at least one tapping, lead means for selectively grounding all terminals of the said primary coil and lead means for selectively grounding all terminals except one of the said secondary coil, the said lead means including resistors and capacities, respectively, the relative position of the said coils and of the selected grounding circuit determining the tone color and the tone volume.

2. The transmission circuit, as set forth in claim 1, which includes a variable resistance, and means for switching the said variable resistance into the said transmission circuit with at least one of the said coils simultaneously with the movement of one of the said coils.

3. The transmission circuit, as set forth in claim 1, in which the connection of the anode of the said first valve with the said primary coil comprises a connection of the said anode with the said tapping of the said coil.

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