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ELECTRIC GUITAR

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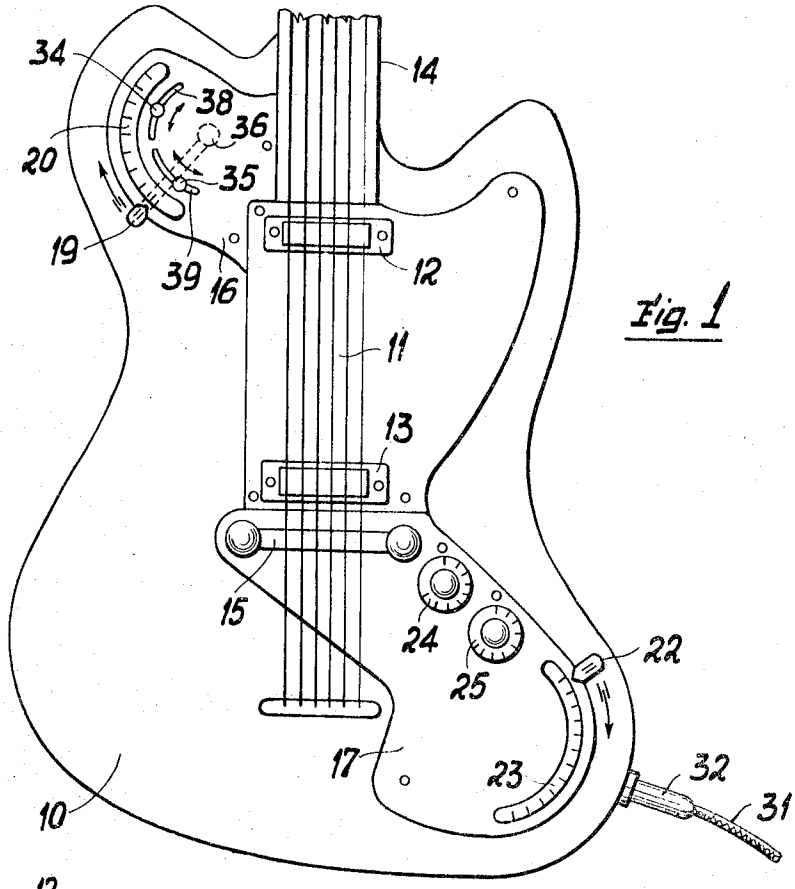


Fig. 1

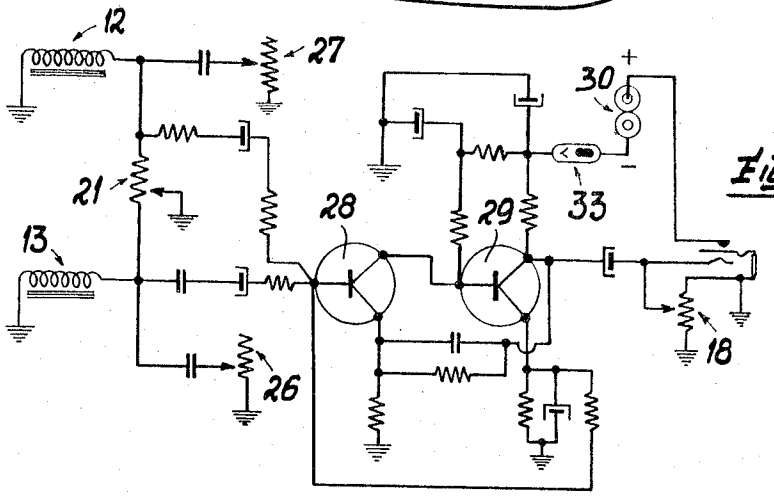


Fig. 2

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ELECTRIC GUITAR

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This invention concerns an improved electric guitar, of the type normally used by dance orchestras.

It is know that electric guitars, of conventional type, are equipped with one or more magnetic microphones, preferably placed under the strings, respectively, in correspondence with the handle's end and near the bridge holding the said ones.

These magnetic microphones are suitable for transmitting the electric pulses, into which the vibrations have been transformed, to an external amplifier which transforms them back into sounds.

The first of said microphones reproduces the deep sounds, as the strings' vibrations are wider, owing to the peculiar position occupied by the said microphone.

The second one, on the contrary, reproduces the higher sounds, owing to less wide strings' vibrations, which are nearer the holding point.

As both microphones are banked, through a single channel, to the amplifier, there follows an unbalance between the two frequencies, compelling the operator to touch up continuously the amplifier's volume control.

For these reasons, known electric guitars, actually built, produce sounds which are subjected to disturbances, ground and background noises, while it is impossible to obtain a rational and homogeneic levelling of both frequencies.

Consequently, the sound's quality is impaired and its volume is not stable, owing to blending or partial mixing of said bands for said frequencies.

The main scope of this invention is the realization of an improvement, as embodied into the apparatus of said type, and such as to eliminate the above referred to difficulties.

The guitars, being the object of this invention, actually allow to obtain, at the feeding end into the amplifier of known type, to which the instrument is externally linked, only perfectly levelled signals, of great strength.

Said improvement, besides offering the possibility of keeping the sound's reproduction apparatus at a lower volume, with great benefits as regarding the quality of its reproduction, allows as well the ground's and background noise's elimination and permits the insertion into the circuit of components such as capacitors and resistors, suitable for predetermining such timbres as otherwise are absolutely unobtainable.

This improvement provides also for the realization of means, to be used in electric guitars, suitable for allowing the automatic breaking of the electric circuits connected to them, when said instruments are disposed in their rest position.

The improved instruments referred to, show also the feature of being equipped with dissolve's and volume's controls, suitably responding to a lever device, partially rotatable around a stationary pin, along a path which may be suitably limited by mobile stops.

These dissolve's and volume's controls, owing to their functional features, show a strong advantage as compared to the similar controls, now used for electric guitars.

Said controls, actually, may be displaced more easily, along a fixed path, by the action of the player's hand.

This last accordingly, thanks to the peculiar shaping of

the levers actuating the dissolve's and volume's controls, as applied to the electric guitars under reference, may play and at the same time actuate said controlling elements. These and other features of these improved guitars may be better understood with the help of the various figures in the enclosed drawing, in which:

In FIG. 1 there is shown an electric guitar, as seen from the top;

In FIG. 2 there is shown an electronic circuit, as applied to the improved guitar under reference; it is characterized in that, before the amplifier circuit, there is provided a potentiometer, having the capacity of obtaining a lap dissolve of the electric pulses, as transmitted by two suitable microphones.

With particular reference to the numerical symbols of the enclosed drawing, the improved electric guitar under reference is characterized in that it comprises two microphones **12** and **13**; these are preferably placed in correspondence of two surface parts of said instrument, near the place where the strings lay.

Particularly, microphone **13** is disposed in correspondence of a position near where the little bridge **15** is located. As clearly shown by examining FIG. 1 of the enclosed drawing, a microphone **12** is preferably applied upon the frontal surface of the guitar, in correspondence with the handle's end's position **14** of said instrument; the microphone **13** shall preferably be applied in correspondence with a position near the bridge **15**.

Owing to this peculiar disposition of microphones **12** and **13**, the first one is reproducing the low sounds, while the microphone **13** will take the higher ones.

Such a diversity of timbres is due to the fact that the string's vibrations, in the position where the microphones have been disposed, are of different width.

Whenever the microphone **12** is inserted into the amplifier, it will be easily remarked that the efficiency of the detector will amount to many times that of microphone **13**; such a phenomenon is due to the fact that the vibrations of strings, above the microphone **12**, are much wider as compared to those taking place in correspondence of a nearby position, in relation to the position where the microphone **13** has been applied.

No one has ever thought how to find a remedy to this heavy difficulty.

The player, in the case of conventional electric guitars, in order to be able to obtain levelled sounds, is forced to use the volume's control of the amplifier, so provoking a consequent augmentation of ground noise.

Such a contrivance, besides, does not allow the perfect mixing of the two microphones, as one is confronted by two signals of different intensity.

For the specific instance of this invention, microphones **12** and **13** are suitably banked to a potentiometer **21**, which allows for the mixing of signals or pulses, coming from said microphones, by suitably controlling the intensity of the same ones.

This control is made possible, by actuating a lever **19**, capable of rotating around a pin **36**, this last being suitable contained within the body of this improved guitar.

Said lever **19** comprises an end part, which protrudes outside the guitar and is partially covered by a metallic plate **16**; this last is slightly above the upper surface **10** of the guitar under reference.

Owing to this peculiar disposition of said plates **16**, as related to the upper surface **10** of the guitar, the lever **19** is capable of jutting out, in correspondence with its end part, from said slit, in such a way as to be very easily displaced by the player.

This type of manual control, as applied to the dissolve's control or potentiometer **21**, is in itself a part of this invention.

Said lever **19** may be suitably coupled to a scale **20**, while in the body of plate **16** there may be made some slits **38** and **39**, in which there are inserted self locking means, preferably of the wing nut type; these may be suitably moved, within fixed limits, along the said slits **38** and **39**.

The two stops **34** and **35** have function of allowing a limitation in the rotation of lever **19**, when the peculiar nature of the music, which is being reproduced, may call for a suitable limitation in the use, within certain limits, of said dissolve's control **21**.

This lever **19**, applied to the dissolve's control **21**, allows an easier control for such element, as compared with the handles, of the type shown in **24** and **25**.

Said handles, in the specific instance of the improved guitar under reference, have the function of regulating the tone for the sounds emitted by the instrument and are, accordingly, applied to the controls schematically shown in FIG. 2 and marked **26** and **27**.

The improved guitar under reference is also characterized in that it comprises a second metallic plate **17**, to which is applied the actuating lever **22** of the volume's control **18**.

Said actuating device is of a similar type to the one shown with **19** and is preferably coupled to a scale **23**. It may be pointed out that this improved guitar is preferably transistorized and fed by electric batteries **30**.

In FIG. 2 of the enclosed drawing there are shown two transistors **28** and **29**, being parts of the amplifier's circuit, applied to the guitar under reference. With **33** is marked a mercury bulb, which acts as an automatic switch for the electronic circuit amplifying the sounds. More specifically, said mercury bulb has the function of automatically opening and closing the feed circuit of the batteries, whenever the guitar is respectively put in its rest or use position.

This bulb, in other words, permits the passage of electric current only when the mercury, owing to a suitable inclination of the bulb itself, may arrive at a prefixed level.

Such a contrivance allows the player to part with the trouble of breaking the circuit whenever he ceases the use of his instrument.

Naturally said bulb **33** is applied in such a position as to close the circuit when the guitar is placed in a position corresponding to its use; the element **33** acts as a switch, when the guitar is inclined otherwise.

It is good to remark that the actuation of the lever **19** allows the use of the lap dissolve for the sounds and consequently for the electric pulses respectively received and transmitted by the microphone **12** and **13**.

Owing to the peculiar features of the dissolve's control under reference, it is possible to level suitably the sounds received by the two microphones **12** and **13**, by actuating one lever only; said one may influence and modify, gradually and contemporaneously, the intensity of signals received by said microphones **12** and **13**.

It is claimed:

1. In an electric guitar, in combination, a guitar housing having an opening; a plurality of guitar strings mounted on said guitar housing extending above said opening; at least two microphones mounted on said guitar housing and located in the region of and spaced from each other in direction of said guitar strings so as to receive tones of different types; operable electrical mixing means arranged within said guitar housing and connected to said microphones for mixing the tone signals transmitted by the same and adjusting the amplitudes of said tone signals relative to each other in such a manner that upon operation of said electrical mixing means the amplitude of the tone signals of one microphone is increased while the amplitude of the tone signals of the other microphone is decreased, and vice-versa; a plurality of adjusting means each associated with one of said microphones for individually adjusting the tone signals transmitted by the respective microphone; and pre-amplifier means arranged also in said guitar housing and connected to said electrical mixing means for amplifying the mixed electrical signals derived therefrom; and connector means on said housing connected to said pre-amplifier means and adapted to be connected to a conductor for transmitting the pre-amplified mixed tone signals.

2. An electric guitar according to claim **1** wherein said electrical mixing means includes mechanical means manually operable for adjusting said mixing means.

3. An electric guitar according to claim **2** wherein said electrical mixing means comprises a potentiometer having a resistance element and a sliding contact movable along said resistance element and connected to ground potential, said microphone being connected to said resistance element, and said mechanical adjusting means being linked to said sliding contact.

4. An electric guitar according to claim **3** wherein said mechanical adjusting means comprises a lever mechanically connected to said sliding contact and electrically isolated therefrom, said lever projecting out of said guitar; an indicating scale associated with said lever and mounted on said guitar for indicating the position of said lever; and adjustable stopping means located at each end of said scale for limiting the motion of said lever.

5. An electric guitar according to claim **1** wherein said adjusting means for individually adjusting the tone signals transmitted from said microphones includes means for suppressing noise signals associated with said tone signals.

6. An electric guitar according to claim **1** including a portable energy source mounted within said guitar for energizing said pre-amplifier.

7. An electric guitar according to claim **6** including a mercury switch connecting said energy source to said pre-amplifier when said guitar is in one position, and disconnecting said energy source from said pre-amplifier when said guitar is in another position.

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