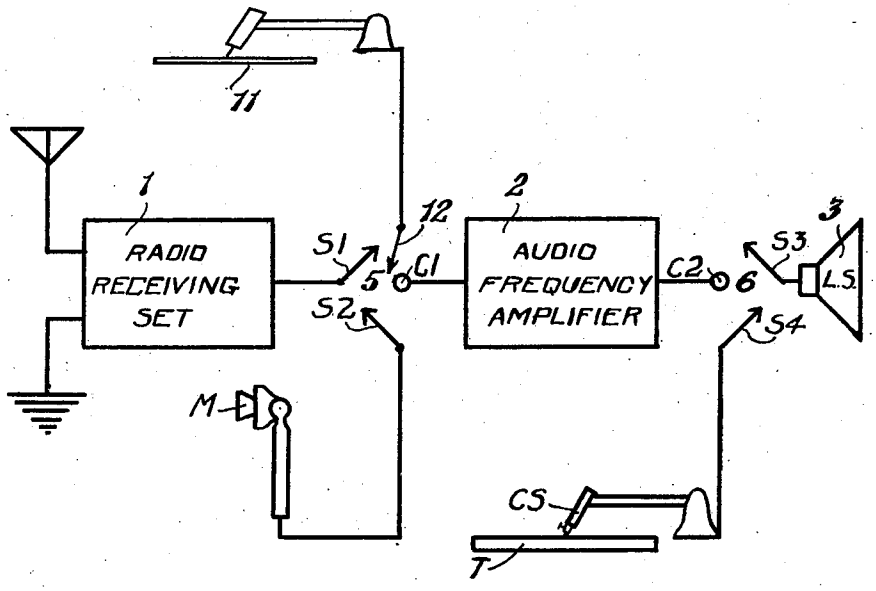
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RADIO AND SOUND REPRODUCING AND RECORDING DEVICE

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INVENTOR
David G. Cohen
BY Harry Radzinsky
ATTORNEY

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DAVID G. COHEN, OF BROOKLYN, NEW YORK

RADIO AND SOUND REPRODUCING AND RECORDING DEVICE

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This invention relates to a radio and sound reproducing device adapted for use in combination with means for producing phonographic records. The object of this invention is to provide a combination of reproducing and recording means whereby a radio program received by a radio receiver may be combined with local sound transmitted through a microphone and reproduced through a loud speaker and recorded on a phonograph record. In other words, if we assume that the radio receiver, to which my invention is applied, is tuned in to and is receiving, say, for instance, an orchestral number, I can, through the medium of my invention, introduce a vocal accompaniment to the orchestral sound, whereby the resultant sound issuing from the loud speaker will be in the nature of a combined orchestral and vocal number.

It is also possible, through the medium of my invention, to make a phonographic record or record a program, consisting of both local sound and radio broadcast matter. It is also possible to listen to the reproduction of such a program simultaneously with the making of a phonographic record thereof. These and other results are readily attainable through the use of my invention.

Reference is to be had to the accompanying drawing, forming a part hereof, in which the figure shown is a diagrammatic view illustrating the circuit employed in carrying out my invention.

In the circuit disclosed in the accompanying drawing, 1 diagrammatically indicates a conventional type of radio receiving set, the output of which is connected to an audio frequency amplifier 2. A switch 5 is interposed between the output of the radio receiving set and the input of the audio frequency amplifier 2. Said switch is provided with a fixed contact C1 and a movable contact lever S1. It will be obvious that when the movable switch lever S1 is in contact with the fixed member C1, the circuit between the radio receiving set 1 and the audio frequency amplifier 2 will be closed. At 3 is indicated a loud speaker which is connected to the output of the audio frequency amplifier by means of a switch 6 having a fixed contact C2 and a movable arm S3. Thus, when the switch arm S1 is connected to the fixed contact C1, and when the movable switch arm S3 is in contact with the fixed member C2, signals received by the radio set 1 and amplified by the audio frequency amplifier 2 will be heard through the loud speaker 3.

At M is shown a microphone which is adapted to be connected to the input C1 of the audio frequency amplifier 2, the microphone M being provided with a switch arm S2 to effect such a connection. It will be clear that when the switch arm S2 is connected to the fixed contact C1, sound transmitted by the microphone M will be amplified by the audio frequency amplifier 2 and such amplified sounds will issue from the loud speaker 3. If the switch arm S1 is in contact with the fixed contact member C1 and the switch arm S2 is also in contact with C1, it will then be apparent that both broadcast sound received by the radio receiving set 1 and local sound transmitted by the microphone M will be amplified by the audio frequency amplifier 2 and the radio broadcast program and the local sound will emanate together from the loud speaker 3.

At CS is shown a phonograph record recording device which operates upon a record held upon the usual turn-table T. The recording device CS is connected to a switch arm S4, which is adapted to close circuit with the switch point C2.

From the foregoing, the manner in which my improved radio and sound-reproducing and recording device is used, will be readily understood. If we assume that it is desired to have a vocal arrangement accompany a radio broadcast of a violin solo this can be readily done by bringing the movable switch members S1 and S2 both in contact with the fixed member C1, and also by bringing the switch arm S3 in contact with the switch member C2. Thus, when a broadcast program is being received, a vocalist may sing into the microphone M and the sound emanating from the loud speaker 3 will be in the nature of a combined violin and vocal

selection. The volume of the radio broadcast accompaniment may be controlled by a volume control located in the radio receiving set so that such accompaniment may be subdued or pronounced according to the desires of the listener. To further the effect, another loud speaker can be connected to the output of the audio frequency amplifier, such loud speaker preferably being located at a distance or in a room other than that in which the singer and apparatus are located.

When it is desired to make a phonograph record of a dual program of the character just mentioned, this can be easily arranged by leaving the parts in the position heretofore described and bringing the recording device into the circuit by connecting the switch member S4 to the fixed switch member S2. Thus, such a program as may be received by the radio set 1 and also transmitted through the microphone M will be recorded through the medium of the recording device CS operating on a record held on the turn-table T. If the loud speaker 3 is left connected to the output of the audio frequency amplifier, the program as recorded will be simultaneously reproduced by the loud speaker.

It will be clear that from the arrangement disclosed, very many novel and interesting results can be obtained. By the connection of a microphone in the manner indicated, it is possible to interpose extraneous local sounds into the received radio program so that the final amplified resultant sound emanating from the speaker will consist in the combination of a radio broadcast program and a locally transmitted sound. By suitable volume controls, the volume of both or either the radio broadcast program and the local sounds may be made more pronounced or retarded, so that the reproduced sound will be adapted to the ears of the listener. Through the connection of a record-producing device in the manner disclosed, it is possible to produce a phonograph record composed of local sound combined with radio broadcast selections.

I am aware that efforts have been made in the past to combine a radio-received program with sound received from a reproduced phonograph record. This has been found impractical due to the inability of the operator to properly synchronize the speed of the record being reproduced with the radio program being received and for many other reasons. The human element necessary to enable one of the sounds transmitted to adapt itself to the other and harmoniously merge therewith so that the resultant combination of sounds emanating from the loudspeaker will be in time and entirely harmonious, was absent. With my invention, the local sound transmitted by the microphone may be readily adapted to the type of program being received via radio, so that the resultant production will be entirely harmonious and in perfect rhythm.

It is also possible with the apparatus forming the subject matter of my invention, to reproduce sound from a phonograph record simultaneously with sound transmitted by a microphone. To do this, I utilize a phonograph pickup 10, which operates on a phonograph record 11, and said pick-up is connected to a switch-arm 12, which is adapted when required to be electrically connected to the input C1 of the audio frequency amplifier. Thus, when the switch arm 12 and the switch-arm S2 are both connected to C1, it will be apparent that the sound from the record 11 and sound transmitted from the microphone M will be simultaneously reproduced through the speaker 3. In case it is desired to record such sounds the recording device CS is connected into the circuit by bringing the switch arm S4 in contact with C2.

What I claim is:—

1. A device of the class described consisting of means for receiving radio broadcast sounds, an audio amplifier connected to said radio receiving means, a microphone also connected to said amplifier, and a recording device and a loudspeaker connected to the output of the amplifier.

2. A device of the class described comprising means for receiving radio broadcast sounds, an audio frequency amplifier, a microphone, means for connecting said radio receiving means and the microphone or both to the input of the amplifier, a loudspeaker and a recording device and means for connecting said loudspeaker or recording device or both to the output of the audio amplifier.

3. An apparatus of the class described comprising an audio frequency amplifier, a loudspeaker and a recording device simultaneously connected to the output thereof, and a microphone and a phonograph record-reproducing device connected simultaneously to the input of said amplifier.

Signed at the city, county and State of New York, this 17th day of February, 1931.

DAVID G. COHEN.