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ELECTRO-ACOUSTIC TRANSMISSION SYSTEM
FOR STEREOPHONIC SOUND PHENOMENA
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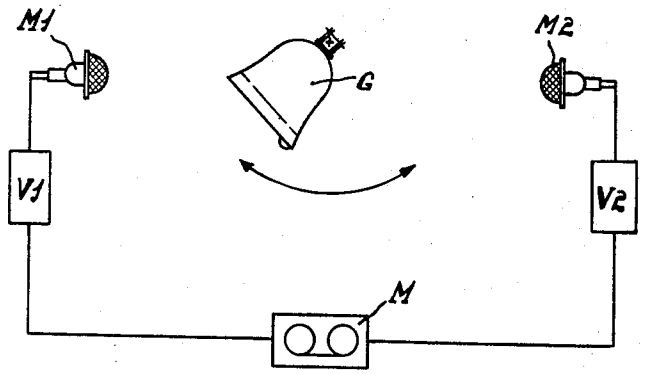

Fig. 1

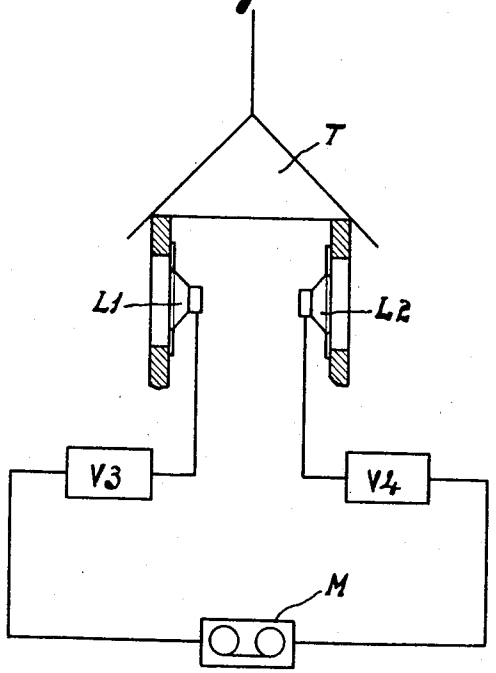

Fig. 2

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ELECTRO-ACOUSTIC TRANSMISSION SYSTEM FOR STEREOPHONIC SOUND PHENOMENA

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1 Claim. (Cl. 179—1)

In radio transmission engineering the magnetophone is used as a sound recording device. In order to permit the use of stereophony for radio purposes two sound tracks have been recorded on a single band for two-channel transmission with the use of a stereophonic device comprising a double-action reproducing and recording head. Experiments made in thus recording intelligence and music by way of two channels proved that the magnetophone is suitable more particularly for stereophonic records of this kind.

The present invention is based on the recognition that particular results are obtainable by employing two-channel transmission magnetophones in electro-acoustic installations for the transmission of church bell-ringing and the like in such manner that the microphones used for recording the sound phenomena are arranged on both sides of the swinging bell(s) and at least substantially in the direction of motion thereof, two loudspeakers or loudspeaker sets for reproduction being arranged on two opposite sides of the location of the hitherto used bell(s).

The invention permits more particularly to replace the bell(s) at arbitrary locations by apparatus comprising a magnetophone, reproduction amplifiers and loudspeakers. It will be appreciated that a reproducing installation of this type is easily displaceable in contradistinction to heavy bells. In addition, the bell-ringing can be determined at will by a corresponding choice of the bell(s) used in recording and is easily variable by recording a different ringing on another band.

In order that the invention may be more clearly understood and readily carried into effect, it will now be described more fully with reference to the accompanying drawing, representing diagrammatically an electro-acoustic transmitting installation according to the invention.

Fig. 1 shows the arrangement of the individual parts of the installation used in the recording bell-ringing. Fig. 2 showing the arrangement used for reproduction.

As appears from Fig. 1 microphones M_1 and M_2 are arranged on both sides of the swinging bell G and preferably in the direction of oscillation. In this arrangement now the microphone M_1, now the microphone M_2 will take up the major part of the sound in accordance with the phase of motion of the swinging bell. The microphone amplifiers are designated V_1 and V_2, the double-action magnetophone being denoted by M. Such a magnetophone comprises in a known manner double-action recording heads by which two sound tracks separated by a neutral zone are recorded simultaneously. By providing corresponding double-action reproducing heads the recorded sound can be reproduced stereophonically through amplifiers V_3, V_4 and loudspeakers L_1, L_2 (Fig. 2). The loudspeakers, which may alternatively be replaced by loudspeaker sets, are preferably arranged at opposite sides of the tower T in a direction in which the hitherto used bell(s) oscillate.

Advantageously the loudspeaker sets may, for example, each comprise three loudspeakers having a wide band.

According to the invention it is advisable to use a plurality of double-action magnetophones if particular ringing combinations and carillon playing are to be reproduced.

Fundamentally, two normal magnetophones may be used for the sound recording of both channels. In practice, however, it is difficult to operate both apparatus in step in an adequate manner for stereophony.

What I claim is:

A system for recreating the sound of a bell swinging in a predetermined arcuate path comprising means for separately detecting the sound of said bell at two spaced points on opposite sides of said bell substantially in the plane of said path, means for separately recording the sound detected at each of said two points in separate channels of a sound carrier, means for separately reproducing the sound recorded in said channels, and means for projecting the sound separately reproduced from each of said channels in opposite directions from the reproduction means to thereby audibly create the effect of a swinging bell.

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