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PREPARATION OF SOUND RECORDS FOR REPRODUCTION IN COMBINATION WITH MOVING PICTURES

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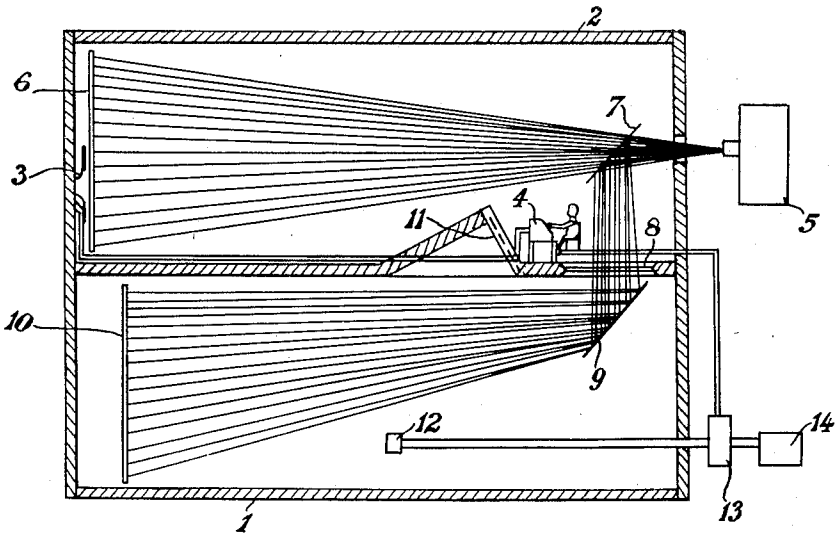


Fig.1.

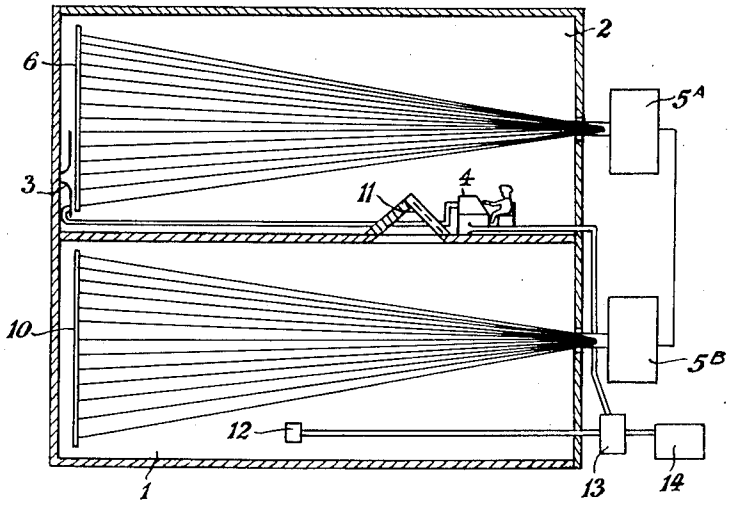


Fig.2.

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PREPARATION OF SOUND RECORDS FOR REPRODUCTION IN COMBINATION WITH MOVING PICTURES

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5 Claims. (Cl. 88—16.2)

The present invention relates to the preparation of sound records for reproduction in combination with moving pictures and more particularly to the making of records of sounds suitable to accompany an already existing moving picture record.

It is known to project a moving picture record in a studio and to record, in synchronism with the moving picture, sounds which are to be reproduced synchronously with the exhibition of the moving picture, and the conductor, organist or other person responsible for the production of the sound accompaniment has customarily been so placed that he could watch the picture while controlling the orchestra or other sound source. The sounds have been recorded by means of a number of microphones connected through amplifiers to recording devices and means have been provided for monitoring the sounds which are being recorded so as to adjust correctly the relative and the overall intensity of the electric currents impressed upon the recording device by the several microphones and sometimes also other characteristics of the oscillations which are being recorded. The person in charge of the monitoring means has been placed in a separate room from which he could view the picture screen but in which the original sounds are relatively inaudible so that he can only hear the sounds reproduced by the monitoring telephone or loudspeaker.

It has been found that in the production of such accompanying sound records, which may involve changing at suitable moments from one sound source to another, the person in charge of monitoring is at least as important as the conductor or organist. It is necessary for him not only to have a good view of the picture to which an accompaniment is being recorded, but also to hear, in a room wherein the original sounds produced are substantially inaudible, a good reproduction of the sounds being recorded. It is further desirable that this room should not differ too greatly in acoustic properties from the theatre in which the film and synchronized sound accompaniment are later to be reproduced, so that the person in charge of monitoring may judge of the ultimate sound effects impressed upon the audience in the theatre.

According to the present invention, therefore, the picture to which an accompaniment is to be recorded is projected synchronously in two separate chambers, one of the chambers accommodating the conductor or the source of the sound to be recorded or both, and the other chamber being provided with means for monitoring and controlling the electric currents corresponding to the sounds to be recorded.

The invention is illustrated by way of example, in the accompanying diagrammatic drawing, wherein Fig. 1 is a sectional view of a studio embodying one system according to our invention, and Fig. 2 is a similar view embodying another system according to our invention.

Referring to Fig. 1, a studio 1 of known type is provided for the orchestra or other main source of sounds and around the studio are arranged a number of auxiliary studios (not shown) to accommodate auxiliary sources of sounds such as a trap drum or an organ played from a console in the main studio. The sounds produced in the auxiliary studios may affect either the microphone 12 in the main studio, through suitable openings, or separate microphones in the auxiliary studios. Adjacent the main studio, and in the arrangement shown above it, is a large room 2 preferably approximating in size and acoustic properties an average moving picture theatre. In this room, there are provided means 3 for reproducing the sounds which are being recorded and means 4 for controlling the recording process. The microphone 12 is connected with a suitable amplifier 13 and a recording machine 14 and a tapping is taken from the amplifier 13 to the loudspeakers 3 while connections pass from the control panel 4 to the amplifier, thus permitting the control of the recording from the control panel 4. A moving picture projector 5 of known type is provided for projecting the picture to be accompanied upon a screen 6 in the monitoring room 2 and in the path of the light beam from the projector 5 is a sheet of clear glass 7 arranged at 45° to the axis of the beam. Part of the beam is projected by this glass sheet through a window 8 in the ceiling of the main studio 1 and, by means of a mirror 9 arranged at a suitable angle, a second picture is projected upon a screen 10 in this studio. A window 11 may be provided in the ceiling of the studio 1 through which the monitoring operator may obtain a view of the conductor and orchestra but the monitoring room 2 is so constructed that the sounds reproduced therein are not interfered with by the original sounds produced in the studio 1 or in the auxiliary studios.

The monitoring operator is preferably seated in a similar position with regard to the screen 6 as an average member of the audience, whereby he is enabled to judge the sound effects reach-

ing such a member, and he has at hand controls which enable him to vary the proportion of the output from any or all of the recording microphones and to interject effects from any of the auxiliary studios or from any other source. By so controlling this output, the monitor can vary the sound to suit the acoustic requirements of the monitoring room and hence, also, substantially satisfying the acoustic requirements of the theatre in which the sound film is eventually to be exhibited.

The reflected beam can, of course, if desired, be projected in the monitoring room.

In a modification of the above described arrangement, instead of placing the sheet of clear glass in the monitoring room 2 and the mirror 9 in the recording room 1, both the clear glass and the mirror may be placed in the projector room, which is then arranged to abut on both the monitoring and the recording rooms, while the secondary beam of light from the mirror is projected through a window at the back of the recording hall.

Instead of the window and mirror at the back of the recording hall, a prism may be employed. Alternatively, when the main beam is allowed to fall upon a screen in the monitoring room, the reflected beam from the glass sheet may be allowed to fall upon a semi-translucent and substantially sound proof screen built into a dividing wall between the monitoring and recording rooms, this screen acting as the picture screen for the recording room.

Instead of using a single projector to project the two pictures, separate synchronized projectors may be used if desired. An arrangement of this sort is shown in Fig. 2 in which like parts are given the same references as in Fig. 1. In this form of the invention, two projectors 5*a* and 5*b* are shown. These projectors are run synchronously and are provided with duplicate picture films so that the same images are produced upon screens 6 and 10 simultaneously.

We claim:

1. The method of forming a sound record to accompany a moving picture which comprises simultaneously projecting the same picture on screens at a plurality of separated points, observing the action of the picture at one of said points and producing sounds to accompany said action, reproducing said sounds at another of said points acoustically isolated from said first-named point, changing the characteristics of said reproduced sounds in accordance with the action of the picture, and recording said changed sounds on a sound record receiving medium.

2. The method of forming a sound record to accompany a moving picture which comprises simultaneously projecting the same picture on separate screens in a plurality of chambers, at least one of which chambers is acoustically isolated from the other chambers, observing the action of the picture in one or more of said chambers and producing sounds to accompany said action, reproducing said sound in said acoustically isolated chamber, controlling the sound in said latter chamber from a point where both the action on the screen in that chamber and the action of the original sound producing source are visible to modify said sound in accordance with either or both of said actions as desired, and recording said modified sound on a suitable record receiving medium.

3. The method of forming a sound record to accompany a moving picture which comprises projecting the same picture onto separate screens in a plurality of chambers at least one of said chambers being acoustically isolated from the other of said chambers, observing the action of said picture in at least one of said chambers and producing the sound accompaniment therefor in the same chamber, converting said sound accompaniment into electrical pulsations corresponding to the original sound, reproducing said sound accompaniment in said acoustically isolated chamber, modifying the characteristics of said electrical pulsations in accordance with the action of the picture and also in accordance with the acoustic properties of said acoustically isolated chamber, and recording said modified electrical pulsations on a suitable medium.

4. The system for recording sound to accompany a moving picture film which comprises, in combination, a plurality of chambers, at least one of which is acoustically isolated from the remaining chambers, screens in said acoustically isolated chamber and in at least one other of said chambers, means for simultaneously projecting said film on each of said screens, sound reproducing means in said acoustically isolated chamber whereby sound produced to accompany said film may be reproduced therein, means in said acoustically isolated chamber for modifying the sound produced to accompany said film, and means for recording the modified sound.

5. The system for recording sound to accompany a moving picture film which comprises, in combination, a plurality of chambers, at least one of which is acoustically isolated from the remaining chambers, screens in said acoustically isolated chamber and in at least one other of said chambers, means for simultaneously projecting said film on each of said screens, means permitting visibility of the remaining chambers from said acoustically isolated chamber, sound reproducing means in said acoustically isolated chamber whereby sound produced to accompany said film may be reproduced therein, means in said acoustically isolated chamber for modifying the sound produced to accompany said film, said modifying means being located in said acoustically isolated chamber at a point from which the action in the remaining chambers is visible, and means for recording the modified sound.

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