

March 7, 1933.

R. K. SPOTTS

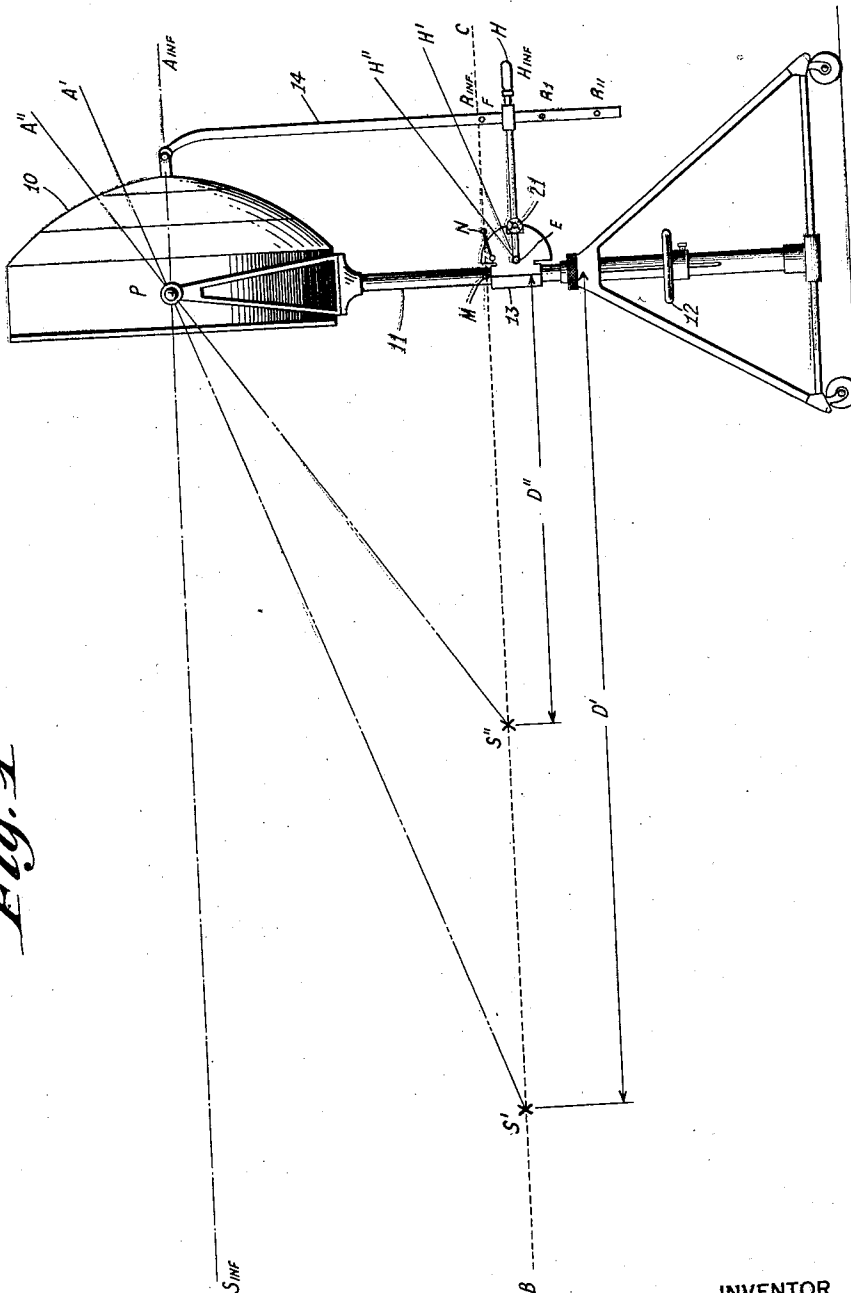
1,899,994

CONVERSION OF SOUND INTO ELECTRICAL IMPULSES

Filed Aug. 28, 1931

2 Sheets-Sheet 1

Fig. 1



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Fig. 2

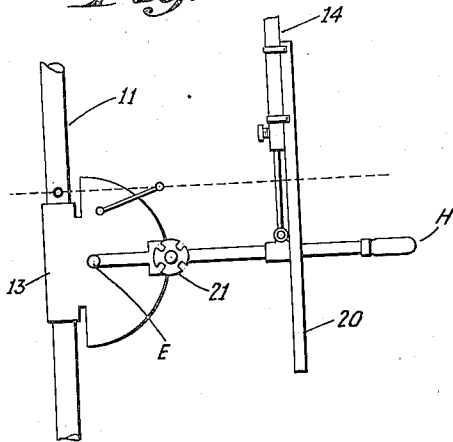


Fig. 3

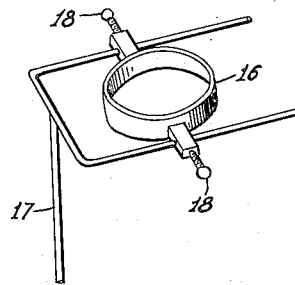


Fig. 4

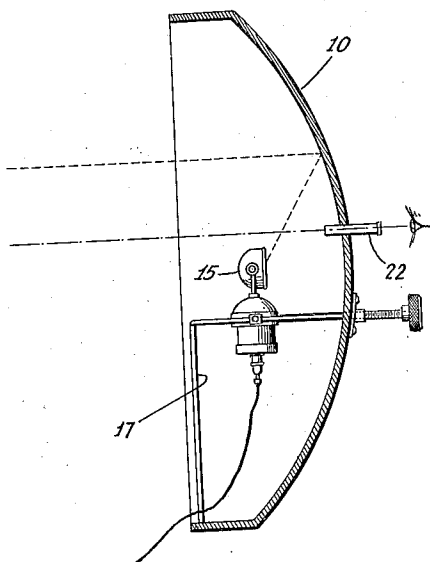
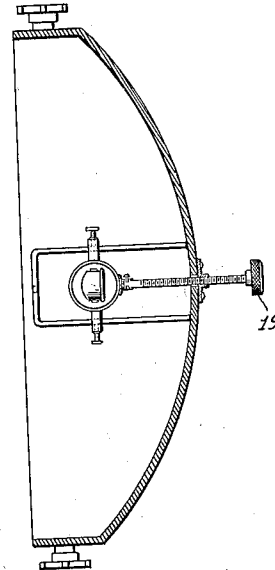


Fig. 5



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CONVERSION OF SOUND INTO ELECTRICAL IMPULSES

Application filed August 28, 1931. Serial No. 559,878.

This invention relates to means for converting sound impulses into electrical impulses, and has for its principal object the provision of an improved apparatus and method of operation which may be readily utilized in the recording or transmission of speech current impulses dependent on sound produced at different points.

The invention will be described as applied to the production of pictures accompanied by sound. It will be apparent, however, that it may be used with equal facility in wire or wireless broadcasting and for like purposes.

In the production of sound pictures, it is customary to pick up the sound by means of a pick-up device including a microphone which converts the sound into electrical impulses of audio frequency and applies these impulses to a sound recorder operated in synchronism with the camera or cameras used to photograph the picture. In order to give the actors the freedom of action required to produce the best dramatic effect, it is necessary not only that the pick-up device be designed to exclude extraneous noise, but also that it be kept out of view of the camera and that it be readily adjusted to pick up sound from various points in the set. In accordance with this invention, the microphone or pick-up device is so constructed that it may be readily calibrated to pick up sound from any desired point in the set and may be readily adjusted either in accordance with or independently of such calibration.

The invention will be better understood from the following description considered in connection with the accompanying drawings, and its scope will be pointed out in the appended claims.

Referring to the drawings:

Fig. 1 illustrates diagrammatically a sound pick-up device wherein my invention has been embodied;

Fig. 2 illustrates various details in the pick-up adjusting or control mechanism; and

Figs. 3 to 5 illustrate various details in the sound concentrator and microphone mounting of the device.

The apparatus illustrated by Fig. 1 in-

cludes a sound concentrator 10 pivoted at P and mounted on a support 11 arranged to have its vertical position adjusted by means of a hand wheel 12. Mounted on the adjustable support 11 is a support 13 and pivoted to this support at the point E is a hand lever H which is arranged to cooperate with a connecting rod 14 for effecting angular adjustment in the position of the sound concentrator 10 within which the microphone is mounted.

The various details of the microphone mounting are illustrated in Figs. 3, 4 and 5. It will be observed that the microphone 15 is supported within a cradle 16 which is arranged to be adjusted along the two prongs of a support 17 and to be fixed in any desired position by means of thumb screws 18. Adjustment in the position of the microphone may of course be effected by hand or by means of a thumb screw 19 (Fig. 5) which is threaded into the concentrator 10.

For the purpose of effecting angular adjustment in the position of the concentrator 10, a fixed sight M is provided on the adjustable support 11, a movable sight N is mounted on the support 13, and cooperating sights R_{int} , R_1 and R_{11} are provided on either the lower end of the connecting rod 14 (Fig. 1) or on an extension 20 (Fig. 2) of this rod. The concentrator adjusting mechanism may be fixed in any desired position by means of a hand wheel 21. In order to permit observations to be made through the concentrator 10 an eye piece 22 (Fig. 4) including cross hairs and a suitable optical system may be provided.

As will be readily understood, adjustment of the concentrator to pick up sound from sets at various distances is effected by the lever H. In the illustrated position, the sights M and R_{int} are alined along the line B C and the concentrator is directed along the line S_{int} A_{int} to pick up sound from an infinite distance. If sight R_1 is adjusted to be in the line B C, the concentrator is adjusted to a position along the line S' A' for picking up sound at a distance D'. Likewise, if the sight R_{11} is adjusted to be in the line B C, the concentrator is adjusted to a position along

the line S'' A'' for picking up sound at a distance D''. Horizontal adjustment of the concentrator is effected by rotation of the support 11 within its supporting sleeve.

5 Up to this point it has been assumed that the apparatus is to be operated on the same level as the set. In order to allow for change in the level of the apparatus with respect to the set, the movable sight N is moved up
10 or down as may be required to ensure ready adjustment of the concentrator to pick up sound at a different level. This feature is of particular advantage in the outdoor use of the apparatus.

15 Having thus described my invention and the operation thereof, what I claim is:

1. A sound pick-up device including a concentrator, a microphone arranged within said concentrator to receive the concentrated
20 sound, a support for said concentrator, a control member pivoted to said support, coupling means extending between said control member and concentrator for adjusting the angular position of said concentrator, and
25 means for predetermining the angular adjustment of said concentrator.

2. A sound pick-up device including a concentrator, a microphone arranged within said concentrator to receive the concentrated
30 sound, a support for said concentrator, a control member pivoted to said support, coupling means extending between said control member and concentrator for adjusting the angular position of said concentrator, means
35 for predetermining the angular adjustment of said concentrator, and adjustable sighting means for predetermining the angular adjustment of said concentrators at different levels.

40 3. A sound pick-up device including a concentrator, a microphone arranged within said concentrator to receive the concentrated sound, a support for said concentrator, a control member pivoted to said support, cou-
45 pling means extending between said control member and concentrator for adjusting the angular position of said concentrator, sighting means mounted on said support, and means arranged on said coupling means to
50 cooperate with said sighting means for predetermining the angular adjustment of said concentrator.

4. The combination of a concentrator, a
55 microphone mounted within said concentrator, a support for said concentrator, concentrator adjusting means pivoted to said support, coupling means interposed between said adjusting means and said concentrator, sighting means mounted on said coupling means,
60 and adjustable sighting means mounted on said support for predetermining the angular adjustment of said concentrator at different levels.

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