

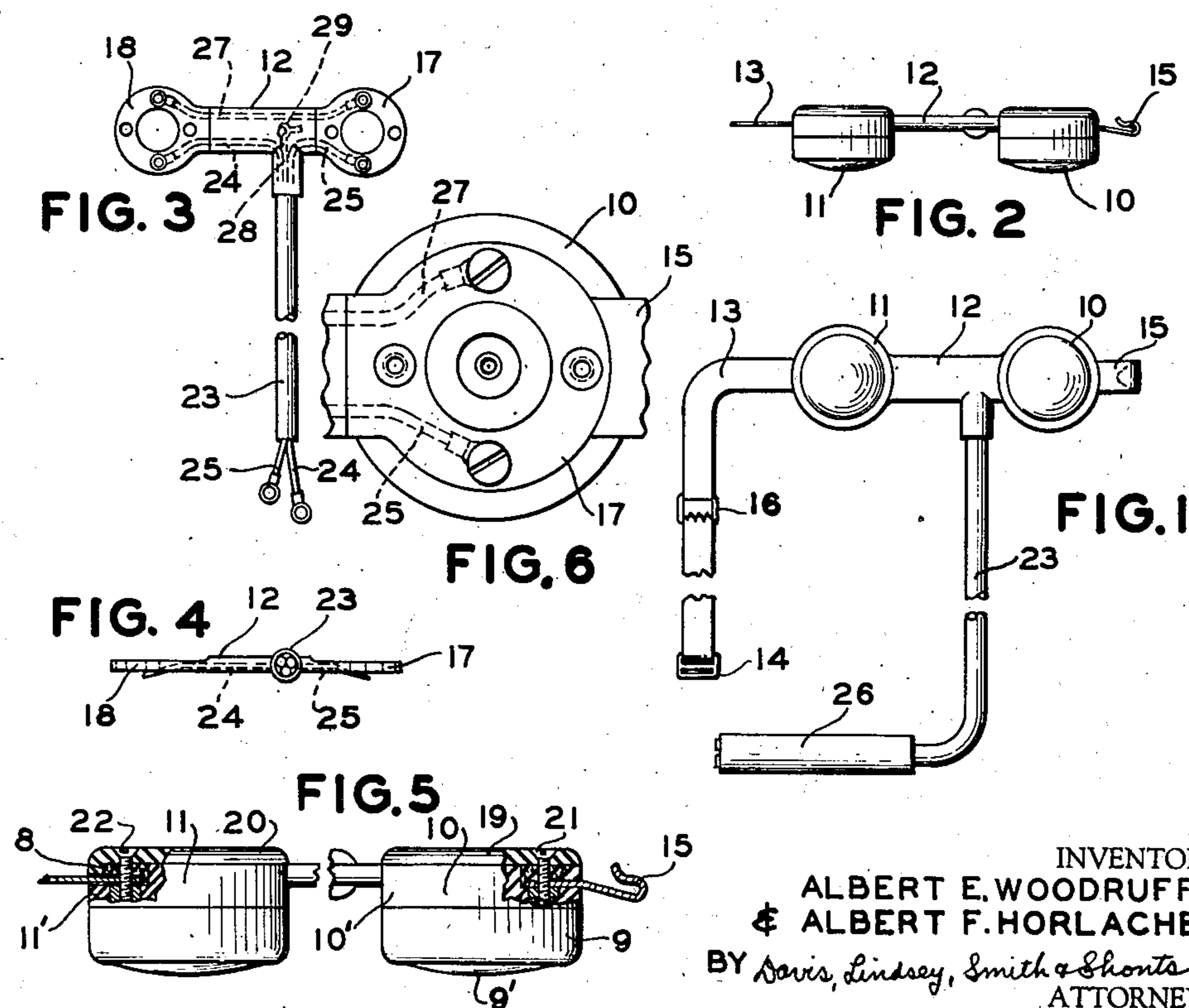
Dec. 19, 1939.

A. E. WOODRUFF ET AL

2,184,262

TRANSMITTER HEAD SET

Filed Sept. 3, 1937



INVENTORS.
ALBERT E. WOODRUFF
& ALBERT F. HORLACHER
BY *Davis, Lindsey, Smith & Shonts*
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,184,262

TRANSMITTER HEAD SET

Albert E. Woodruff, Oak Park, and Albert F. Horlacher, Chicago, Ill., assignors to Associated Electric Laboratories, Inc., Chicago, Ill., a corporation of Delaware

Application September 3, 1937, Serial No. 162,252

4 Claims. (Cl. 179—157)

The present invention relates to transmitter head set supporting apparatus and more particularly to an assembly for supporting a pair of microphone cells in position against the body of a wearer or user.

In the present applicants' co-pending application Serial No. 162,253, filed Sept. 3, 1937, there is disclosed and claimed an improved transmitter cell of the type which is responsive to received mechanical vibrations as contrasted with the conventional type of cell which responds to received sound waves. As explained in the above-referred to application, cells of this character possess definite operating advantages, particularly when used to transmit intelligence or speech from an area wherein the background noise is exceedingly high, such, for example, as from the cockpit of an airplane. In use, a cell of this type is strapped to the throat of the user so that the diaphragm thereof is vibrated in accordance with muscular vibrations of the throat when the user or wearer speaks. Several forms of apparatus have heretofore been used for supporting the microphone cells in position, but all such apparatus involves the use of helmets having the microphone cells embodied therein, or other similar structures of cumbersome character.

It is an object of the present invention, therefore, to provide an improved assembly for the purpose specified which is of simple, economical and rugged construction and is so compact that it may readily be folded up and placed in the pocket of the user when not in service.

In general, the object as set forth above is attained in accordance with the present invention by providing an assembly of the character noted wherein a pair of transmitter cells are secured in spaced apart relation to a supporting member constructed of flexible resilient material, such, for example, as soft rubber, and means comprising this member are used for supporting the cells against the throat of a user or wearer. In the assembly, the circuit conductors terminating at the two cells are embedded in the member supporting the cells throughout at least a portion of the length thereof. Also, the base portion of each cell is provided with a depression within which an enlarged end of the flexible supporting member is seated, and there is embodied in each cell a cover plate which is secured to the base member of the associated cell and is so shaped as to cover the associated enlarged end of the flexible supporting member. A strap carrying a fastening element is secured to the base of one of the cells and another fastening element is se-

cured to the base of the other of the cells; whereby the flexible supporting member, the strap and the various fastening elements comprise means for supporting the cells against the body of a user or wearer.

The novel features believed to be characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the specification taken in connection with the accompanying drawing, in which Figure 1 is a side view of a microphone supporting assembly embodying the invention, Fig. 2 is a top view of the supporting assembly shown in Fig. 1, Fig. 3 is a side view illustrating the details of one of the flexible members referred to above, Fig. 4 is a bottom view of the member illustrated in Fig. 3, Fig. 5 is a view, partially in section, illustrating certain details of the assembly shown in Figs. 1 and 2, and Fig. 6 is a view illustrating certain details of one of the elements embodied in the microphone cells shown in Figs. 1, 2 and 5.

Referring now more particularly to Figs. 1 to 6, inclusive, there is illustrated one embodiment of the improved assembly as comprising a pair of microphone cells 10 and 11, each of which is constructed and arranged in accordance with the disclosure contained in the above-referred to co-pending application, and a member 12 constructed of flexible resilient material, such as soft rubber, to which the cells 10 and 11 are secured in spaced apart relation. In brief, each of the cells comprises a base member of insulating material, a cup-shaped member constructed of cellulose acetate material and having its rim secured to the surface of the associated base member, and a structure positioned between the bottom of the cup-shaped member and the base member and enclosed thereby for retaining therein the granulated carbon pile conventionally embodied in such cells. Thus, in Fig. 5 the cell 10 is shown as comprising a base member 10', a cup-shaped member 9 having its rim secured to the adjacently disposed surface of the member 10' and a carbon pile retaining structure, not shown, enclosed within the two members 9 and 10'. The bottom portion 9' of the cup-shaped member 9 is made relatively thin and functions as the vibrating diaphragm to transmit vibrations to the movable electrode embodied in the carbon pile retaining structure referred to above. It will be apparent from the drawing that the construction

of the cell 11 is in all respects identical with the cell 10 and, hence, need not be described.

The flexible supporting member 12 forms a part of means for supporting the cells 10 and 11 with the respective diaphragms thereof in engagement with the throat of a wearer, this means also comprising a strap 13 having one end secured within the cell 11, in the manner described in detail hereinafter, and a fastening element in the form of an eye 14 mounted on the other end thereof for attachment to a cooperating fastening element in the form of a hook 15 fixedly mounted on the base member 10' of the cell 10. Inserted intermediate the two ends of the strap 13 is a buckle 16 which is provided for the purpose of adjusting the length of the strap to conform to the requirements of a particular user.

As shown more particularly in Figs. 3, 4, 5 and 6, the flexible member 12 is provided at its ends with enlarged annular portions 17 and 18 which are adapted to seat within annular depressions formed in the respective base members 10' and 11' of the cells 10 and 11. These enlarged annular portions are clamped within the depressions noted by means of cover plates 19 and 20 secured, respectively, to the base portions 10' and 11' by screws 21 and 22. In this connection, it is pointed out that the narrowed link portion of the member 12 is seated in slots cut, respectively, along the edges of the base members 10' and 11' in the manner best illustrated in Fig. 6; the slots noted constitute restricted connecting openings respectively formed in the base members 10' and 11' and respectively communicating with the depressions formed therein. Two screws are provided for securing the cover plate of each cell in position and each thereof extends through a hole punched in the annular portion of the flexible member 12. The end of the strap 13 which is secured to the cell 11 extends within a slot provided along the edge of the base member 11' and is held secured to the cell by one of the screws 22 and the clamping force exerted thereon by a projection 8 extending from the cover plate 20 within the slotted portion of the base member 11', and also by the clamping force exerted thereon by the annular portion 18 of the flexible member 12. In a similar manner, the hook 15 is mounted on the base member 10' with the shank thereof extending through a slot cut along the edge of the base member 10'. This hook is clamped to the base member 10' by means comprising a projection formed integrally with the cover plate 19 and extending within the last-mentioned slot, the last-mentioned projection carried by the cover plate 19 corresponding to the projection 8 carried by the cover plate 20.

Each of the two cells 10 and 11 is provided in its base member with a pair of circuit terminals, not shown, and extending to these terminals are circuit conductors embedded in the flexible member 12. More specifically, a circuit conductor cord 23 is provided which includes a pair of insulated conductors 24 and 25 terminating at the terminals of a plug 26 and having extensions embedded in the flexible member 12 and connected, respectively, to one terminal of each of the cells 10 and 11. The two cells noted are connected in series between the outgoing circuit conductors 24 and 25 by means including a third conductor 27, also embedded in the flexible member 12, and connected to one terminal of each of the two cells 10 and 11. By connecting the cells in series in this manner, a greater amplitude of output is obtained with a given vibrational input to the

cells. In order to relieve the embedded conductors 24 and 25 from strain and to enhance the durability of the assembly, a stay cord 28 is provided which includes a knotted end 29 embedded in the flexible member 12. This stay cord may be molded in or otherwise fixedly secured within the insulation of the cord 23.

Due to the flexible and resilient characteristics of the member 12, the assembly as described above may be readily inserted in the pocket of the user and, when removed therefrom, immediately assumes a position for the convenient attachment of the same around the neck of the user. More particularly, the resilient character of the member 12 permits the microphone assembly to be deformed to a convenient configuration for carrying or transport when not in use and insures that the assembly will assume a configuration facilitating the fastening thereof to the wearer's body when released from forces causing its deformation. It will be understood that the strap 13 is adapted to pass around the neck of the wearer and that the eye 14 cooperates with the hook 15, thereby securely to support the two cells 10 and 11 with the diaphragms thereof pressing against opposite sides of the throat of the wearer. When this is done, the member 12 will assume a curved contour and will rest against the front central portion of the user's throat.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is contemplated to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

We claim:

1. A microphone supporting assembly comprising, in combination, a microphone cell including a base having a depression and a restricted connecting opening provided therein, a member constructed of flexible resilient material and including an enlarged end and a connecting link, the enlarged end of said member being arranged in the depression provided in the base of said cell and the adjacent portion of the connecting link of said member being arranged in the restricted connecting opening provided in the base of said cell, a cover plate adapted to seat on the base of said cell and to cover the enlarged end of said member, means for securing said plate to the base of said cell, thereby to anchor the enlarged end of said member securely in place in the depression provided in the base of said cell, and means including said member for supporting said cell against the body of a wearer.

2. A microphone supporting assembly comprising, in combination, a pair of microphone cells each including a base having a depression and a restricted connecting opening provided therein, a member constructed of flexible resilient material and including enlarged ends and an intermediate connecting link, the enlarged ends of said member being respectively arranged in the depressions provided in the bases of said cells and the adjacent portions of the connecting link of said member being respectively arranged in the restricted connecting openings provided in the bases of said cells, a cover plate for each of said cells so shaped as to cover the associated enlarged end of said member, means for securing said plates to the respective associated bases of said cells, thereby to anchor the enlarged ends of said member securely in place in the depressions respectively provided in the bases of said

cells, and means including said member for supporting said cells against the body of a wearer.

3. A microphone supporting assembly comprising, in combination, a pair of microphone cells each including a base having a depression and a restricted connecting opening provided therein, a member constructed of flexible resilient material and including enlarged ends and an intermediate connecting link, the enlarged ends of said member being respectively arranged in the depressions provided in the bases of said cells and the adjacent portions of the connecting link of said member being respectively arranged in the restricted connecting openings provided in the bases of said cells, a cover plate for each of said cells so shaped as to cover the associated enlarged end of said member, means for securing said plates to the respective associated bases of said cells, thereby to anchor the enlarged ends of said member securely in place in the depressions respectively provided in the bases of said cells, a strap including a fastening element mounted on one end thereof and having the other end secured to the base of one of said cells, a second fastening element secured to the base of the other of said cells and adapted to cooperate with said first-mentioned fastening element, and means including said member, said strap and said fastening elements for supporting said cells against the body of a wearer.

4. A microphone supporting assembly comprising, in combination, a pair of microphone cells

each including a base having a depression and a restricted connecting opening provided therein, a member constructed of flexible resilient material and including enlarged ends and an intermediate connecting link, the enlarged ends of said member being respectively arranged in the depressions provided in the bases of said cells and the adjacent portions of the connecting link of said member being respectively arranged in the restricted connecting openings provided in the bases of said cells, a cover plate for each of said cells so shaped as to cover the associated enlarged end of said member, means for securing said plates to the respective associated bases of said cells, thereby to anchor the enlarged ends of said member securely in place in the depressions respectively provided in the bases of said cells, circuit terminals mounted on the base of each of said cells, circuit conductors connected to said terminals, said conductors being embedded in said member throughout at least a portion of the length thereof, a strap including a fastening element mounted on one end thereof and having the other end secured to the base of one of said cells, a second fastening element secured to the base of the other of said cells, and adapted to cooperate with said first-mentioned fastening element, and means including said member, said strap and said fastening elements for supporting said cells against the body of a wearer.

ALBERT E. WOODRUFF.
ALBERT F. HORLACHER.