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MICROPHONE MOUNTING FOR HEARING AIDS

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Fig. 1

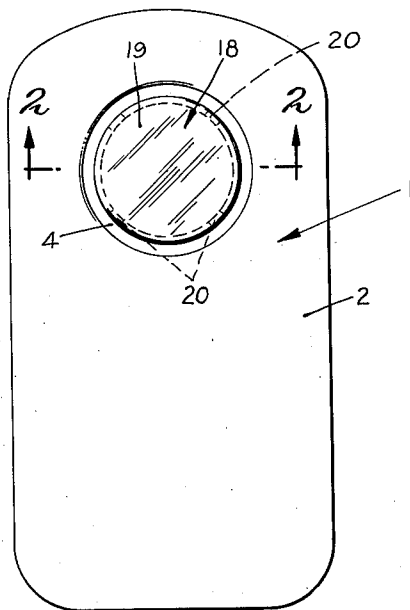
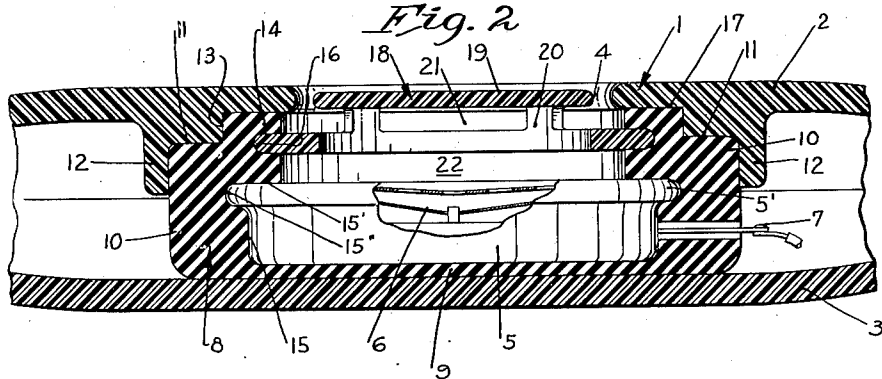


Fig. 2



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UNITED STATES PATENT OFFICE

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MICROPHONE MOUNTING FOR
HEARING AIDS

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2 Claims. (Cl. 179-107)

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My invention relates to hearing aids and, more particularly, to means for reducing or eliminat-
ing extraneous noises from the microphone
thereof.

It is common practice in the manufacture of
hearing aids to position the microphone behind
a perforate grill section formed integrally with
one of the side walls of the casing. Due to the
fact that the casing is conventionally carried in
the wearer's pocket or on other portions of the
body where it is subject to frictional engagement
with the clothing of the wearer and other objects,
extraneous noises arising from movement of the
clothing over portions of the casing are picked
up by the microphone and transferred to the
ear of the wearer with a resultant noise dis-
turbance which at times becomes very uncom-
fortable.

In accordance with my invention, I provide
a grill member which is disassociated from the
casing and insulated both from the casing and
from the microphone. With this novel arrange-
ment, noises picked up by the casing are not
transmitted to the grill member and hence are
not picked up by the microphone.

Another object of my invention is the provision
of a structure which, while greatly reducing the
noise factor, is no more expensive to manufacture
than conventional models heretofore produced,
which is durable in use, and which can be used
to enhance the appearance of the instrument.

The above and still further objects and ad-
vantages of my invention will become apparent
from the following detailed specification, ap-
pended claims, and attached drawings.

Referring to the drawings, wherein like char-
acters indicate like parts throughout the several
views:

Fig. 1 is a view in front elevation of a hearing
aid casing incorporating my novel arrangement;
and

Fig. 2 is an enlarged fragmentary section, taken
substantially on the line 2-2 of Fig. 1.

Referring with greater particularity to the
drawings, the numeral 1 indicates, in its entirety,
a casing of a conventional hearing aid, preferably
formed from synthetic resins or the like and
comprising two matching shell-like front and
rear sections 2 and 3 respectively. The front wall
section 2 is provided intermediate its side edges
and preferably above its longitudinal center with
a circular opening 4. The obvious reason for
positioning the opening 4 above the medial
center of the front wall section 2 is so it extends
above the top of a shallow pocket, such as a

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vest pocket in which the casing 1 is frequently
carried by the wearer. Conventionally housed
within the casing 1, together with other elec-
tronic apparatus not shown, is a microphone unit
5 of the type manufactured by Shure Brothers,
Model HM6, and having therein the usual dia-
phragm 6. Terminals 7, one of which is shown,
project laterally from the microphone 5 and are
adapted to make electrical contact with other
electronic apparatus not shown. The microphone
5 is carried by a shallow cup 8 which may be made
of any relatively soft flexible resilient material
such as soft rubber. The closed end 9 of the
cup 8 is adapted to abut the rear wall section 3;
and the annular side wall 10 of the cup 8 ex-
tends forwardly to a point where it has abutting
engagement with the inner surface of the front
wall section 2, as indicated at 11. The front
wall section 2 is provided with an axially in-
wardly projecting circumferential flange 12
which closely encompasses the annular side wall
10 of the cup 8 and maintains the same against
lateral movement within the housing 1. The
inner surface of the front wall section 2 is
counterbored concentric with the opening 4, as
indicated at 13, to receive the extreme forward
or open end 14 of the cup 8.

The inner surface of the annular wall 10 is
provided with channels 15 and 16 in the former
of which the microphone 5 is seated. It will be
seen that a portion 15' of one side wall of the
channel 15 overlies the forward marginal edge
of the microphone 5, whereby to prevent move-
ment thereof in a direction outwardly of the
cup. When the microphone is equipped with a
flange 15', as shown in Fig. 2, the channel 15
is cut away as indicated at 15'' to contain said
flange. Generally, the microphone is bottomed
in the cup 8 so as to have abutting engagement
with the closed end 9 thereof.

Seated in the groove or channel 16 is an
anchoring flange 17 of a perforate grill element
18. It will be noted that the central portion of
the grill element 18 is in the nature of a flat
circular plate 19 axially offset from the anchor-
ing flange 17, whereby to provide a tubular side
wall 20 having therein circumferentially-extended
slots or perforations 21. The plate 19 lies sub-
stantially in the plane of the front wall section
2 concentric with the circular opening 4 and
radially inwardly spaced from the side edge
thereof. The spacing between the grill element
18 and the microphone 5 provides a relatively
dead air chamber 22; and it will be seen by refer-
ence to Fig. 2 that the side edges of the opening

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4 and the circular plate 19 are rounded to provide smooth contours.

The grill element 18 may be formed from any suitable material such as metal or synthetic resins. In either event, the plate portion 19 may be provided with decorative markings or designs which enhance the overall appearance of the instrument.

While I have disclosed a preferred embodiment of my invention, it will be understood that the same is capable of modification without departure from the spirit and scope of the invention as defined in the claims.

What I claim is:

1. In a hearing aid, a casing having front and rear wall sections, said front wall section having a circular opening therethrough, a rubber-like cup within said casing, the base of said cup being in contact with the rear wall of said casing and the open end thereof being in contact with the front wall section of said casing concentric with and adjacent to said circular opening, means limiting lateral movements of said cup within said casing, a microphone within said cup and inwardly spaced from the open end thereof, means limiting axial movements of said microphone in said cup, a radially inwardly opening groove in the side wall of said cup intermediate the microphone and the front wall section of the casing, and a perforate grill member having its peripheral edge seated in said cup, the central portion of said grill member being axially outwardly offset from the peripheral portion thereof and lying within the opening of the casing in spaced relation to the side edges thereof.

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2. In a hearing aid, a casing having front and rear wall sections, a circular opening in one of said wall sections intermediate the side edges thereof, a rubber-like cup within said casing with its bottom end in contact with the other of said wall sections and with its open end in contact with said one of said wall sections concentric with the opening therein, means limiting lateral movements of said cup within said casing, the inner wall of said cup being provided with a pair of axially-spaced circumferentially-extended channels, a microphone within said cup seated within the innermost of said channels, a circular grill element seated in the other of said channels in axially spaced relation to said microphone and said front wall section, said grill element comprising a circular plate in substantially the same plane as the outer surface of said one of said wall sections and concentric with the opening therein, an axially-projecting tubular perforate side wall, and an outwardly-projecting circumferential anchoring flange seated in said channel.

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