CONVENTION OR NON-CONVENTION APPLICATION

PATENT OR PATENT OF ADDITION

INSTRUCTIONS

(a) Insert full name(s) of applicant(s).

1/We (a) SONY CORPORATION

(b) Insert full address(es) of applicant(s).

Designate (c) CONVENTION or (d) NON-CONVENTION

APPLICATION

(c) Insert title of invention.

(d) Insert title of invention.

I/We request that the patent may be granted as a patent of addition to the patent applied for on application No. in the name of SONY CORPORATION.

I/We request that the term of the patent of addition be the same as that of the patent for the main invention or so much of the term of the patent for the main invention as is unexpired.

This application is a Convention application and is based on the following application or applications for a patent or patents or similar protection made in the following country or countries on the following date or dates:

No. (g) 89498/75 in (h) Japan on (i) 22nd July 1975

No. (g) in (h) on (i) 19

No. (g) in (h) on (i) 19

My/Our address for service is care of CLEMENT HACK & CO., Patent Attorneys, 414 Collins Street, Melbourne, Victoria, Australia.

(j) Dated this 19th day of July 1976

(k) SONY CORPORATION
COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952-1962

DECLARATION IN SUPPORT OF A CONVENTION OR NON-CONVENTION
APPLICATION FOR A PATENT OR PATENT OF ADDITION

INSTRUCTIONS

(a) Insert No. of application.
(b) Insert full name of applicant(s).
(c) Insert title of invention.
(d) Insert full names of declarant or declarants, who must be a person(s) not a corporate body. (See head note.)
(e) Insert address(es) of declarant(s).
(f) Delete entirely if applicant is a corporate body.
(g) Delete entirely if applicant is a person or persons.

A. Deleten entirely if Convention priority NOT claimed.

(b) Insert country in which first basic application was filed.
(c) Insert name of applicant(s) NOT claimed.
(d) Insert full names of actual inventor(s) NOT claimed.
(e) Insert address(es) of actual inventor(s) NOT claimed.

(f) Insert manner in which application(s) derive title from basic application(s) NOT claimed.

(g) Delete entirely if Convention priority NOT claimed.

(h) Insert country in which application(s) derive title from basic application(s) NOT claimed.

(i) Signatures of declarant(s).

INSTITUTIONS

A. Deleten entirely if Convention priority NOT claimed.

(b) Insert country in which first basic application was filed.
(c) Insert name of applicant(s) NOT claimed.
(d) Insert full names of actual inventor(s) NOT claimed.
(e) Insert address(es) of actual inventor(s) NOT claimed.

(f) Insert manner in which application(s) derive title from basic application(s) NOT claimed.

(g) Delete entirely if Convention priority NOT claimed.

(h) Insert country in which application(s) derive title from basic application(s) NOT claimed.

(i) Signatures of declarant(s).

N.B No seal or stamp impression to be applied.

DECLARATION IN SUPPORT OF A CONVENTION OR NON-CONVENTION
APPLICATION FOR A PATENT OR PATENT OF ADDITION

16 036 /76

made by (b) SONY CORPORATION

for a patent for an invention entitled (c)

SOUND PICK UP ASSEMBLY

1. (d) Yasuo KANAI

of (e) 7-35, Kitashinagawa 6-chome,

Shinagawa-ku,

Tokyo, Japan

do solemnly and sincerely declare as follows:

1. (g) I am authorized by the abovementioned applicant for the patent to make this declaration on its behalf.

2. The basic application(s) as defined by Section 141 of the Act was/ were made in the following country or countries on the following date (a) by the following applicant(s) namely:

2. (i) Japan on 22nd July 1975 by (k) SONY CORPORATION.

2. (j) 19

3. (m) Toshitada DOT

20 JUL 78

of (n) 62, Negishi Asahidai,

Naka-ku, Yokohama-shi,

Kanagawa-ken, Japan.

is/are the actual inventor(s) of the invention and the facts upon which the applicant(s) is/are entitled to make the application are as follows:

as regards entitlement under Section 34 of the Act: - (o) the said SONY CORPORATION is the assignee of the said inventor(s).

as regards entitlement under Part XVI of the Act: - (q).

4. The basic application(s) referred to in paragraph 2 of this Declaration was/ were the first application(s) made in a Convention country in respect of the invention the subject of the application.

Declared at Tokyo, Japan this 13th day of July 1976

SONY CORPORATION

TO: THE COMMISSIONER OF PATENTS,
COMMONWEALTH OF AUSTRALIA
CLAIM 1. A microphone supporting assembly comprising:
a first member having an inner concave sound reflecting surface with
a focus;
means for supporting a first microphone at said focus;
dummy ear means extending radially outwardly from the edge of said
first member; and means for supporting second and third microphones
adjacent to respective opposite outer edge regions of said first
member so as to be behind said dummy ear means as viewed from the
concave side of said first member.
Complete Specification for the invention entitled:

"SOUND PICK UP ASSEMBLY"

The following statement is a full description of this invention, including the best method of performing it known to me/us:

[Description of the invention continues here]
BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates in general to a sound pickup assembly and more particularly to a novel pickup comprising a parabolic reflector pickup as well as a binaural sound pickup device.

Description of the Prior Art

In general, to pick up sound, a single or a pair of microphones are attached to a microphone stand. In order to pick up sound from a distant source effectively, a parabolic reflector is often times employed so as to amplify the sound which is supplied to a microphone at its focal point. For example, a microphone in combination with a parabolic reflector is suitable for picking up sounds from animals or other distant sound sources.

It has also been known in the prior art to have a so-called dummy head stereophonic recording systems which use a dummy head with a pair of microphones placed adjacent the ear positions of such a head. Such dummy heads are effective for reproducing sounds by means of particularly headphones. Thus, a listener with headphones can obtain the same effect as if he were in a concert hall and sound sources can be distinguished from nearly all directions and distances with such pickups.

The fundamental reason that the artificial or dummy head stereophonic sound devices are successful is that the sound pressure appearing at the external ears of a dummy head and which are recorded through microphones and then reproduced through a headphone gives very accurate reproduction especially through a two-microphone to ear phone system.
Most dummy heads used generally in the prior art are shaped to appear as a human head, however, when a dummy head simulates the human head very closely, an unpleasant effect is obtained by other persons in the concert hall who observe such dummy heads.

A stethoscope type stereophonic microphone assembly has been used for picking up binaural sound which has an arc-shaped resilient pipe with a microphone mounted at each end of the pipe and with ear mounting projections attached to the microphones for being inserted into the auditory canals of a user and with an output fed out from the center of the resilient pipe. With such an assembly the sound picked up directly at the user's ears has a characteristic which is different depending upon the particular individual ears. Also, when using such devices for a long period of time, the wearer becomes tired and the microphone attachments in his ear are painful. Furthermore, it is difficult for a person wearing such assembly to maintain his head absolutely still and thus the sound pickup will not have the optimum characteristic.

**SUMMARY OF THE INVENTION**

The present invention provides a microphone supporting assembly comprising:

a first member having an inner concave sound reflecting surface with a focus;

means for supporting a first microphone at said focus;

means extending radially outwardly from the edge of said first member; and means for supporting second and third microphones adjacent to respective opposite outer edge regions of said first member so as to be behind said
It is an object of the present invention to provide a novel sound pickup assembly with a parabolic sound reflector and which also

...
includes a binaural sound pickup.

Yet another object of the invention is to provide a sound pickup assembly with a parabolic sound reflector in which the outer or reverse surface of the parabolic reflector is curved so as to resemble a human face and upon which are mounted a pair of dummy external ears so that the assembly will provide a pickup like a human head.

Another object of the invention is to provide a sound pickup assembly utilizing a parabolic sound reflector which has a pair of dummy external ears mounted on its rear surface and at the peripheral portion of the parabolic reflector and with sound absorbing material attached to the dummy external ears to make it possible that sound can be picked up which would simulate the pickup with human ears.

Yet another object is to provide a sound pickup assembly with a parabolic sound reflector for a single sound pickup or alternatively for binaural sound pickup as desired.

Other objects, features and advantages of the invention will be readily apparent from the following description of certain preferred embodiments thereof taken in conjunction with the accompanying drawings although variations and modifications may be effected without departing from the spirit and scope of the novel concepts of the disclosure and in which:

**BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1 is a perspective view illustrating an example of the sound pickup assembly according to the invention;

Figure 2 is a cross-sectional view taken on a horizontal plane line II-II in Figure 1;
Figure 3 is a perspective view illustrating a modification of the sound pickup of the invention; and
Figure 4 is a cross-sectional view taken on a horizontal plane on line IV-IV in Figure 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Figures 1 and 2 illustrate a first embodiment of the invention comprising a parabolic reflector 1 mounted on a stand 10 so as to form the sound pickup assembly A of the invention. The parabolic reflecting dish 1 may be made of plastic or resin and has a parabolic surface 1a at least on a first side in which a first sound pickup microphone 2 is mounted. The sound pickup microphone 2 is mounted on the sound reflecting member 1 on the concave inner surface 1a of the reflecting member 1 at its focus and a supporting rod 3 and attaching member 4 is provided for forming an attaching member for the microphone 2. The supporting member 2b of the sound pickup microphone 2 is held by the clamping member 4 of the attaching device 5 so as to locate the head 2a of the microphone 2 at the focus of the inner surface 1a of the reflector 1.

A pair of dummy external ears (left and right dummy external ears) 6a and 6b are attached symmetrically on the outer surface 1b adjacent the edge 1c and are arranged on a generally horizontal plane through the focal point of the reflecting member 1. Behind the dummy external ears 6a and 6b on the outer surface 1b of the reflecting member 1 are provided supporting recesses 8a and 8b adapted to receive and support a pair of microphones 7a and 7b in a detachable manner and adjacent the dummy external ears 6a and 6b so as to obtain the binaural --------------------------------
effect of human ears. It is also possible that the dummy external ears 6a and 6b may be formed in a continuous ring which extends completely about the periphery of the reflector 1.

In a particular example the microphones 7a and 7b may be separated by a distance of about 30 to 40 cm and it is possible that the shape or configuration of the dummy human ears 6a and 6b comprise flat projections as shown in the figure but it is preferred that they be shaped similar to human external ears so as to closely duplicate the sound characteristics of a human listener. When the external ears 6a and 6b are made of the same material as that of the reflecting member 1 a sound absorbing sheet material 9 made of, for example, felt or the like should be bonded to the rear surfaces of the dummy external ears 6a and 6b on their surface which oppose the microphones 7a and 7b so as to improve the sound characteristics. The microphones 7a and 7b should be non-directional microphones.

The supporting base 10 for the reflecting member 1 comprises an upper support member 10a which connects to the lower half portion of the outer surface 1b of the reflecting member 1 and a stand or leg member 10b which is connected to the attaching member 10a and has a ground stand at its lower end. The supporting rod 3 of the attaching device 5 for the second pickup microphone 2 passes through the wall of the reflecting member 1 and is then attached to the attaching member 10a of the support 10. The reflecting member 1 is detachably mounted on the attaching member 10a.

The sound pickup assembly of the invention allows the microphone 2 and side 1a of the inner surface of the reflecting member 1 to serve as a sound pickup device or alternatively the rear side 1b ---------------
and the microphones 6a and 6b to be used as a sound binaural pickup. It is to be realized, of course, that normally the two systems would be alternately used, in other words, one or the other of the systems would be used.

A second embodiment of the invention is illustrated in Figures 3 and 4 wherein the sound reflecting member 1' is modified from that illustrated in Figures 1 and 2 and wherein planar surfaces 11a and 11b are formed on opposite sides of the reflector as illustrated in Figure 4 by making indentations in the surface of the reflector 1'.

The surfaces 11a and 11b form vertical surfaces and dummy external ears 6'a and 6'b are provided as shown in Figures 3 and 4 adjacent the vertical surfaces 11a and 11b and receive thereon a pair of microphones 7a and 7b, respectively. The microphones may be detachably connected to the surfaces 11a and 11b. Sound absorbing sheets 9'a and 9'b are bonded to the rear surfaces of the dummy external ears 6'a and 6'b respectively.

In the example illustrated in Figures 3 and 4 the microphone 2, and inner surface 1'a serves as a directive sound pickup device and the back side 1'b and the microphones 7a and 7b serve as the binaural pickup.

Thus, as described above the present invention allows the sound pickup assembly to be used as a sound pickup device by attaching the sound pickup microphone 2 to the inner surface of the reflecting member 1 having a parabolic surface and allows the sound pickup also to be used as a binaural dummy head by providing left and right dummy external ears symmetrically mounted on the outer surface of the reflecting member and by attaching a pair of microphones adjacent the
dummy external ears. The outer surface of the reflecting member is convex and simulates the surface of a human face and, thus, the outer surface together with the dummy external ears form a dummy head very similar to a human head. As a result, the assembly of the invention can produce the sound pickup characteristics similar to those of a human head and also the assembly of the invention will not be moved or fluctuate to obtain undesirable sound fluctuations as occur when a stethoscope binaural system is attached to a human head. Thus, binaural sound pickup can occur over long periods of time.

Also, the sound pickup assembly of the invention can perform as a two way sound pickup or can be used as a dummy head and a directive sound pickup device so many various sound pickups can result with the present invention as compared to the prior art devices.

Also, the sound pickup assembly of the invention can be freely transported and moved about and it is suitable for picking up outside sounds.

Although the invention has been described with respect to preferred embodiments it is not to be so limited as changes and modifications may be made which are within the fully intended scope as defined by the appended claims.
THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A microphone supporting assembly comprising:
   a first member having an inner concave sound reflecting surface with a focus;
   means for supporting a first microphone at said focus;
   dummy ear means extending radially outwardly from the edge of said first member; and means for supporting second and third microphones adjacent to respective opposite outer edge regions of said first member so as to be behind said dummy ear means as viewed from the concave side of said first member.

2. An assembly according to claim 1, wherein said dummy ear means comprises two ears, one ear being at one opposite outer edge region and a second ear being at the other opposite outer edge region.

3. An assembly according to claim 1, wherein said radially outwardly extending means comprises a continuous ring which extends completely around said edge.

4. An assembly according to claim 1, wherein said opposite outer edge regions are flattened to form parallel planar surfaces.

5. An assembly according to any one of the preceding claims, wherein said dummy ear means comprises sound absorbent material adjacent to said means for supporting second and third microphones and facing the locations to be occupied by said second and third microphones.

6. An assembly according to any one of the preceding claims comprising a first microphone at said focus and supported by
the appropriate said means.

7. An assembly according to any one of claims 1 to 5 comprising second and third microphones supported by the appropriate said means.

8. A microphone supporting assembly substantially as hereinbefore described with reference to Figures 1 and 2 of the accompanying drawings.

9. A microphone supporting assembly substantially as hereinbefore described with reference to Figures 3 and 4 of the accompanying drawings.

ATED this 2nd day of January 1979.

SONY CORPORATION
By Its Patent Attorneys

CLEMENT HACK & CO.