

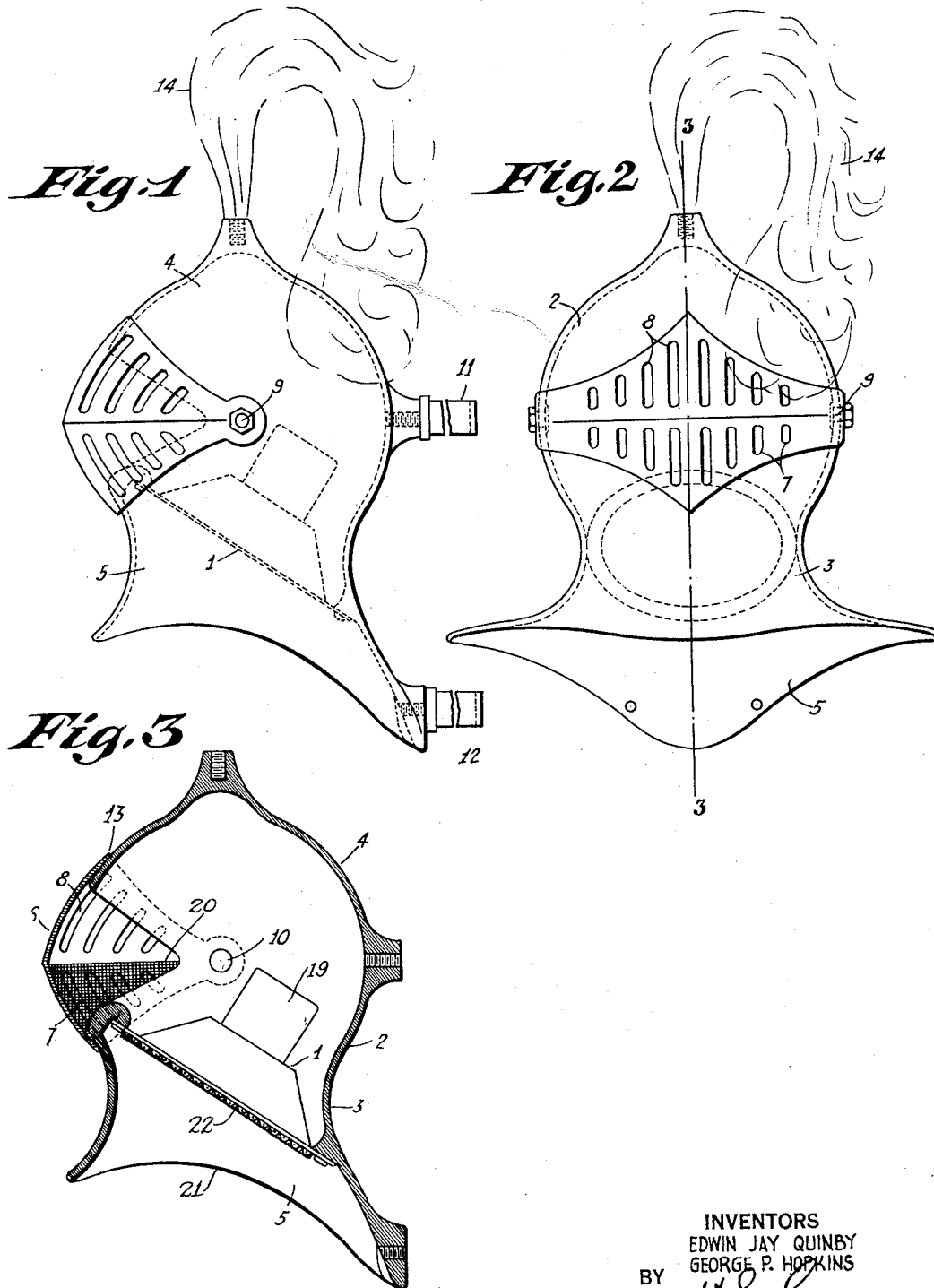
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SOUND REPRODUCER

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# UNITED STATES PATENT OFFICE

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## SOUND REPRODUCER

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6 Claims. (Cl. 181—31)

This invention relates to acoustic reproducing devices. More particularly it relates to acoustic reproducing devices which are adapted to be located out doors and to means for protecting these acoustic devices from the elements. The means, at the same time, is arranged to provide desired acoustic properties.

In many instances it has been necessary to locate sound reproducers out doors in places where they have been exposed to the elements with, in some instances very detrimental results. The general mounting of sound reproducers out doors is in itself objectionable, unless some means is provided for protecting the reproducers from the elements and from damage through tampering with the reproducers by unauthorized persons.

It is the object of the present invention to overcome the objectionable features set forth hereinbefore and to provide means for protecting the acoustic reproducers from the elements and for preventing undesired tampering with the reproducers.

Another object of the invention is to arrange the protecting means in a manner such that it will have desired acoustic properties among which might be mentioned (1) baffle properties, (2) directional horn effect, and (3) ventilation for the enclosure at the back of the cone.

Other and more specific objects of the invention will become apparent upon reading the following specification and appended claims in connection with the accompanying drawing in which,

Figure 1 is a side view of the device showing the reproducer in dotted lines.

Figure 2 is a front view of the device and Figure 3 is a view taken along line 3—3 of Figure 2.

Referring to the figures in which like parts are indicated by like reference numerals, the sound reproducer is indicated generally at 1. The reproducer may be of any type such as for example, the moving coil or electrodynamic type. It consists primarily of a framework or body portion 19 carrying a driving apparatus and a diaphragm usually conical in form. The dimensions of the diaphragm may be varied to meet the existing problem throughout a rather wide range. It has been found however, that a diaphragm approximately 8" in diameter will give very good results.

When the sound reproducer is of the dynamic type it may also include a field rectifier unit, coupling transformer and/or other associated operating devices. This apparatus does not necessarily constitute a part of the sound reproducer

but may be closely associated therewith and protected by the same housing.

Around the loudspeaker 1 is arranged a housing 2 which in this particular modification is given substantially the shape of a knight's helmet. The housing or casing 2 has a narrow neck portion 3, an enclosing or head portion 4 and a shoulder portion 5. It is also provided with a visor 6 covering an opening in the enclosure or head portion 4 and through which the mechanism may be serviced. The visor is provided with one row of ventilating louvres 7 and one row of false louvres 8. The visor may be attached to the helmet in any suitable manner but it has been found very desirable to have it pivoted at points 9 and 10 by means of cap screws. As a result of this arrangement the visor can easily be removed entirely. In some instances it has even been found desirable to apply a caulking material around the upper edge 13 of the visor. Two mounting clamps 11 and 12 are provided at the back of the casing or helmet 2.

The sound reproducer is mounted so that the diaphragm is substantially at the neck portion of the helmet. The loudspeaker may be arranged so that the diaphragm is either directed vertically downwardly or at an angle to the centre line of the helmet, as shown in the figures. The driving mechanism and any associated apparatus extend into the head portion 4.

The head portion 4 is designed so as to form an enclosure portion having desired acoustic properties behind the diaphragm. The enclosure communicates with the open air by means of the ventilating louvres 7. This communication prevents the setting up of an air pocket in back of the diaphragm which would tend to add stiffness to the diaphragm and in other ways to damp the diaphragm motion. The louvres 7 are covered with a suitable screen as indicated at 20 to protect the mechanism from the weather. It should be noted, however, that they are under the largest part of the head portion 4 and are thus protected from the elements to a considerable extent.

The shoulder portion 5 is arranged so as to serve as a short horn which increases considerably in cross sectional area or flares outwardly towards its lower edge 21. Its purpose is to direct the sound into the desired area and at the same time to give an acoustic amplification. The mouth of the horn or shoulder 5 is open to the atmosphere, but the diaphragm of the sound reproducer is itself preferably provided with the usual form of grille as indicated at 22. The

mounting clamps 11 and 12 may be of any suitable design and arrangement depending upon the structure by which the helmet is to be supported.

The helmet may be of any suitable material such as metal or alloy thereof and it may be shaped in any well known manner. It has been found that cast aluminum helmets give very good results as they are not easily tarnished by the weather and because this metal is of a non-resonant character. It would of course also be possible to use helmets made of any composition which could be molded or otherwise shaped. But it is highly desirable that the metal or composition be substantially non-resonant or at least that it does not have a resonant frequency within the audible range.

The helmet when made from a metal such as aluminum may be polished or if desired may be painted any desirable color. The helmet is provided with plumes 14 which are preferably made of sheet copper and painted suitable colors. It has been found that a highly polished aluminum helmet with plumes painted in bright colors gives a very desirable and attractive effect, and that this arrangement at the same time provides the desired acoustic and protective properties.

While a preferred arrangement has been described it is to be understood that the shape and design can be varied to some extent so long as the general acoustic and protective means are met. It is to be understood therefore, that the invention is not to be restricted to the particular acoustic arrangement or design shown but that any similar arrangement or modification thereof which will fall within the scope of the appended claims is considered as a part of the invention.

What we claim is:

1. Apparatus for reproducing sound comprising a sound reproducer having a diaphragm and a body portion, and a casing for said reproducer, said casing having a portion adapted to receive and enclose the body of said reproducer, a narrow portion adjacent the diaphragm, a horn like portion for the sound waves from the diaphragm and a closure member for said narrow portion to prevent sound waves emitted in the first named

casing portion from passing into said horn portion.

2. A housing for a sound reproducer comprising a single vertically arranged body closed at its top surface and one side and having an enclosure portion for the sound reproducer, and a downwardly directed horn portion for the sound waves set up by the sound reproducer, the effective length of said horn portion being substantially less than that of said enclosure portion.

3. A housing for a sound reproducer comprising a single body having an enclosure portion for the sound reproducer, openings in said enclosure portion, and a horn portion for the sound waves from said sound reproducer and means acoustically separating said enclosure portion from said horn portion.

4. An acoustic device having the shape of a knight's helmet consisting of a casing, having a neck portion, a head portion and a shoulder portion, an acoustic reproducer mounted with its diaphragm substantially at the neck portion and its operating mechanism in the head portion, a visor mounted on said head portion, louvres in said visor for providing a communication between the interior of said head portion and the open air, and means on said helmet for supporting the helmet from a supporting structure.

5. In combination, a casing having curved sides which are tapered inwardly to meet at its top and which are flared outwardly to form a horn portion near its base, a loudspeaker mounted across said casing and serving to subdivide it into upper and lower compartments one of which is said horn portion, the axis of said speaker being directed toward said horn portion, one side portion of said casing having an opening of substantial area located above said speaker through which access to said speaker may be had, and a removable member secured to said casing to form a protective cover for said opening.

6. A housing for a sound reproducer comprising a body portion and a horn portion, said housing being formed of non-ferrous metal whereby corrosion of the parts is prevented when the reproducer is used in exposed locations.

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