Feb. 7, 1939. S. GORDON 2,146,570

BODY CARRIER FOR BATTERY HEARING AID

Filed Dec. 11, 1936

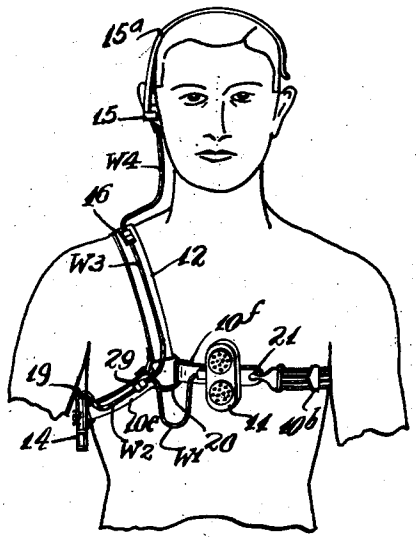



Fig. 1.

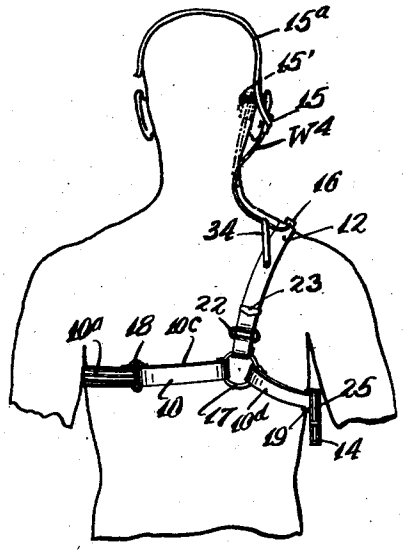



Fig. 2.

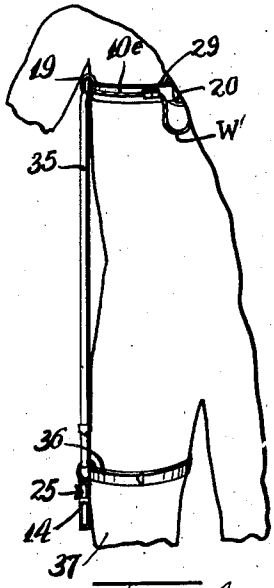



Fig. 4.

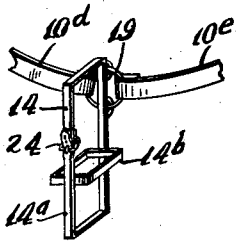



Fig. 3.

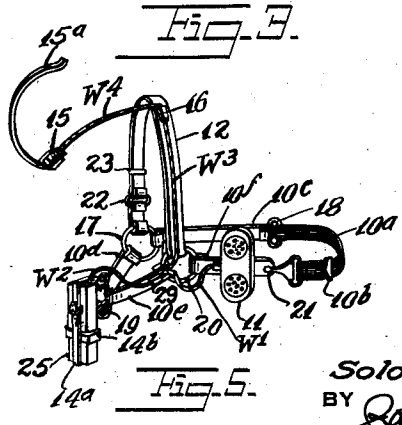



Fig. 5.

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# UNITED STATES PATENT OFFICE

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## BODY CARRIER FOR BATTERY HEARING AID

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Application December 11, 1936, Serial No. 115,336

4 Claims. (Cl. 179—107)

This invention relates to new and useful improvements in a body carrier for either air or bone conduction battery hearing aids.

The invention has for an object the construction of an article as mentioned which is characterized by a body band associated with a shoulder strap and equipped to hold a battery and a transmitter and associated with wires forming a circuit for the hearing piece of the hearing aid. The dominant feature of this construction then resides in the fact that the body carrier is a complete unit in itself, independent of the clothes of a wearer. Thus, the clothes may be independently removed, changed, or adjusted when desired, or the body carrier may also be independently removed. This arrangement permits the body carrier to be worn over certain clothes or under the clothes, as one's taste may dictate.

I am aware that prior to my invention various straps have been made and used for various purposes, but my invention resides in the combination of a strap system substantially as hereinafter shown and described to which the hearing aid has been associated so as to produce a complete unit for the hearing aid.

It is another object of this invention to so arrange the body band that it may be worn about one's chest without bodily discomfort.

Still further it is contemplated to associate an elastic with the body band so that it will have little confining effect on the body or chest.

Still further the invention proposes to arrange the body carrier in such a manner that the shoulder strap may be worn on either shoulder, thus adapting the device to the right or the left side of the head and that stock units can be snugly adjusted to various chest sizes and all types of battery hearing aids.

Still further the invention proposes to so arrange the body band that it is secured about the chest and shoulder by means of one buckle or its equivalent in a manner so that the hearing aid cannot be displaced from the body in any sort of physical movement, and the wearing of this carrier will not prevent free chest and body movements, and in addition the entire unit may be removed by simply disconnecting the said one buckle.

Another object of this invention is to provide a device of the class described which may be washed or laundered readily and worn parts easily replaced.

A further object of this invention is to so construct the device that only the wire leading to the head piece is exposed when closed in outer wearing apparel. The transmitter of the hearing aid may be worn exposed without sacrificing any of the above outlined objects.

Furthermore, it is in the province of this disclosure to include the secure carrying of a radio receiving set, revolver, time clock or any such device that is to be concealed under one's clothing.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing forming a material part of this disclosure:—

Fig. 1 is a front elevational view of a body carrier for battery ear aid shown applied upon a person.

Fig. 2 is a rear view of Fig. 1.

Fig. 3 is an enlarged perspective detailed view of a portion of the battery holding portion of the device.

Fig. 4 is a fragmentary view similar to Fig. 3 but showing another embodiment of the invention whereby a battery may be supported around one's leg or other part of the body.

Fig. 5 is a perspective view of the device.

The body carrier for battery hearing aid, according to this invention, comprises a body band 10 for engaging about one's body and adapted to support a transmitter 11. A shoulder strap 12 for engaging over one's shoulder is attached at its ends on the body band, at the front and rear portions thereof. A battery holder 14 is supported from the body band 10. Electric wires for the electric circuit of the hearing aid is mounted on and extended along the body band and shoulder strap as hereinafter more fully described so that a hearing piece 15 is operative for the hearing aid and may be connected in the circuit at the shoulder strap portion of the device, that is, the point indicated by reference numeral 16.

The usual wires supplied with the battery hearing aid set may also be used in their original length, and the excess wires be secured to the body band and shoulder strap in any suitable manner; or these wires may be cut and adjusted to suit the individual; or plug-in terminals may also be used as indicated by reference numerals 16 and 29, so as to have the least amount of wire and at the same time to be able to replace worn out units of the wire, or to use either a short or long wire to various battery positions.

The body band 10 includes an elastic section 10a which makes it resilient so that it does not

interfere with the expansion and contraction of one's chest. Furthermore, the elastic is provided with a conventional adjustment arrangement controlled by a buckle 10b so that its operative length may be adjusted. This naturally controls the size of the body band. The elastic section 10a preferably should extend beneath one's armpit and so that a small portion is located to the front and to the rear of a person.

The back portion of the body band 10 is composed of two distinct sections 10c and 10d joined by a ring 17 of the split key-ring type or it may be solid. One end of the section 10c is connected with a loop element 18 by which it is connected with the elastic section 10a. One end of the section 10b is provided with a ring 19, similar to ring 17, by which it is connected to the front sections of the body band. These front sections are indicated by the reference numerals 10e and 10f. The ring 19, connects with the section 10e. This section 10e in turn connects with a ring 20, also similar to ring 17, which in turn connects with the section 10f. This last section is to be made of a stiffer material than the other sections of the body band and shoulder straps, so that section 10f should withstand clasping, pinning or otherwise fastening the transmitter 11 to same.

The rings of split key-ring type 17, 19 and 20 and loop elements 18 and 22 provide means of easily assembling all units of the carrier and also disassembling for laundering or replacements.

The adjacent ends of the section 10f and the elastic section 10a are detachably connected with each other by a conventional fastening element 21. This conventional fastening element may be in the form of a buckle construction or other arrangement. When it is opened the body band may be removed. The shoulder strap 12 is mounted between the rings 17 and 20. The shoulder strap 12 is arranged to include a loop element 22 and an adjustment arrangement controlled by the buckle device 23. The arrangement permits the shoulder strap to be adjusted so that the device may fit various person's sizes. Also the proportions of the various sections may be so arranged to permit the body carrier to be inter-changeable from one shoulder to the other.

The shoulder strap 12, may also be connected to ring 17, without the use of loop element 22.

The battery holder 14 comprises a vertical strap 14a which is attached to the top and bottom of ring 19 and which has overlapping ends controlled by a fastening element 24. There is also a horizontal holding band 14b associated with the strap portion 14a which is capable of coacting to hold a battery in position. The arrangement permits the fastener 24 to be opened to permit the insertion or removal of any special made battery for which the battery holder is to be made to suit.

In Figs. 1 and 2 a battery 35 is shown supported within the holder 14. This battery is located beneath one's armpit. At this position it is particularly intended to be worn by men beneath their top shirts or jackets. The transmitter 11 is clipped upon or in any other manner as provided by the manufacturer of the hearing aid, secured on the strap section 10f. Wires W2 extend from the battery to a connector 29 mounted on the strap section 10e. From here the wires continue into a section W1 connected with the transmitter. Preferably, this section W1 should be loose as shown in Fig. 1, and long enough to permit the removal of the transmitter 11 from strap section 10f, and to place the transmitter on a table or any object or on the wearer's jacket or overcoat lapel or in the pockets of the outer side of a garment.

The wires W3 then continue to the connector 16 on shoulder strap 12. From the connector a wire W4 continues to either ear pieces 15 of the air conduction type or 15' of the bone conduction type, either of these ear pieces may be supported on a head band 15a. An elastic band 34 may be mounted upon the shoulder strap 12 and is connected with the wire section W4 to normally hold it tautly stretched downwards. Thus when one's head is bent the wire section W4 will give, but at all times it will have the tendency of being drawn inwards under one's clothes. The connector section 16 may readily be opened for replacing the wire section W4 when it becomes worn. This wire section will become worn first as it is exposed to the greatest wear when used.

The details of the wiring of the battery hearing aid will not be given in this specification as such wiring circuits are generally known and further, specifically, form no part of this invention. Broadly, the wires are included in the combination of the invention merely insofar as they are mounted upon and extend along portions of the body band and the shoulder straps, and furthermore, insofar as they include plug connectors, or the like by which portions of the circuit may be opened and connected again as desired and arranged upon different parts of the body band and the shoulder strap.

In Fig. 4 another embodiment of the invention has been disclosed in which there is an adjustable strap 35 connected with the ring 19 of the body band 10. This strap 35 is adapted to extend down one's leg and at its lower end supports the battery holder 14. Thus the battery holder may be attached around one's leg. For this reason an auxiliary strap 36 is provided and wire W2 will be longer in this case and secured to strap 36. Fig. 4 schematically shows a leg, indicated by numeral 37, to illustrate the manner in which the battery holder is attached. This particular form of the invention is more adaptable for women.

It will be obvious from the above, that:

(a) With this device a person can comfortably carry a hearing aid against the body with no outer clothing or a minimum amount of clothing as is desired in the home, office, at the beach, in the field of sport or when doing manual labor.

(b) There will be no need of removing the hearing aid when changing outer clothing during the day.

(c) This carrier will minimize the possible damage by dropping any part of the hearing aid.

(d) This carrier will prevent wear and tear of the pockets and fabric of a person's clothing and free the use of the pockets of the clothing for their original purpose.

(e) This carrier will minimize bending and breaking of the wires or the wearing off of the covering of the wires, causing short circuits in the hearing aid.

(f) Only about ⅓ of the wire now furnished with the hearing instrument will be necessary.

(g) Since that part of the wire extending from the neck to the head wears out, and is soiled faster than the balance of the wiring, the entire wire unit need not be replaced, but only that part extending from the plug connector 16, at the shoulder to the ear or head piece at a fraction of the cost of an entire wiring unit.

(h) This device is adaptable to the use of a special battery case to be filled with common

standard dry cells at from ½ to ⅔ less in cost than the special batteries furnished by the manufacturers of hearing devices, with the added efficiency of being able to readily replace any one of the low voltage cells making up the battery unit, by means of testing each individually with a voltmeter. This battery case also will help prevent damage to clothing from leaky batteries, and replacement battery units can be readily obtained in any locality of any country at all times.

(*i*) The cost of this body carrier for hearing aid is quickly compensated for in the saving of wires and batteries.

Owing to the adjustable and reversible features of this device, several persons of different sizes may be fitted with one size of the carrier, for either right or left side reception and so enable a dealer to carry a comparatively small number of the article in stock and nevertheless be able to fit a large number of customers.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:—

1. A body carrier for battery hearing aid comprising a body band for engaging about one's body and adapted to support a transmitter, a shoulder strap for engaging over one's shoulder and at its ends attached on said body band at front and rear portions thereof, a battery holder supported on said body band, wires for the electric circuit of said hearing aid mounted upon and extending along said body band and to the head piece of the hearing aid and a resilient member extending between a portion of said wire leading to said head piece and said shoulder strap to keep said wire in a taut condition.

2. A body carrier for battery hearing aid comprising a body band for engaging about one's body and adapted to support a transmitter, a shoulder strap for engaging over one's shoulder and at its ends attached on said body band at front and rear portions thereof, a battery holder supported on said body band, and wires for the electric circuit of said hearing aid mounted upon and extending along said body band and shoulder strap so that a head piece of the hearing aid may be connected in said circuit at the shoulder strap, said electric circuit including several connectors mounted upon the body band and shoulder strap.

3. In a body carrier for a battery hearing aid, a shoulder strap for engaging over one's shoulder and having its ends connected with a body strap at the front and rear thereof, a head band for engaging over one's head, a head piece mounted on one end of said head band, a transmitter and a battery supported on said body band, a wire connecting said transmitter, said battery, and said head piece in a circuit to carry sound waves from said transmitter to said head piece, and an elastic band extending between said shoulder strap and said wire in the vicinity of said shoulder strap to keep said wire leading to said head piece in a taut condition.

4. In a body carrier for a battery hearing aid, a shoulder strap for engaging over one's shoulder and having its ends connected with a body strap at the front and rear thereof, a head band for engaging over one's head, a head piece mounted on one end of said head band, a transmitter and a battery supported on said body band, a wire connecting said transmitter, said battery, and said head piece in a circuit to carry sound waves from said transmitter to said head piece, and an elastic band extending between said shoulder strap and said wire in the vicinity of said shoulder strap to keep said wire leading to said head piece in a taut condition, said wire being formed of separate sections of wire connected together by connectors so that when a section of said wire becomes worn it may be easily replaced without the expense of replacing the entire wire.

SOLOMON GORDON.