J. L. SPENCE.

HELMET FOR AVIATORS.

APPLICATION FILED MAR. 16, 1916.

1,235,851.

Patented Aug. 7, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

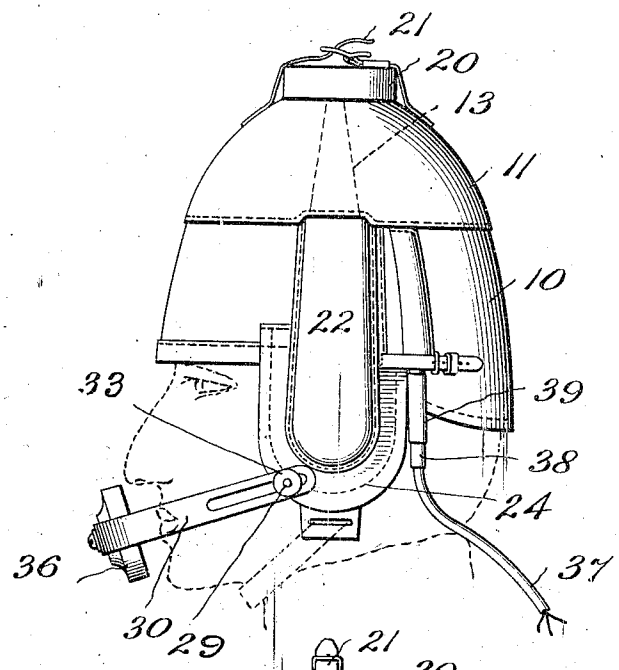
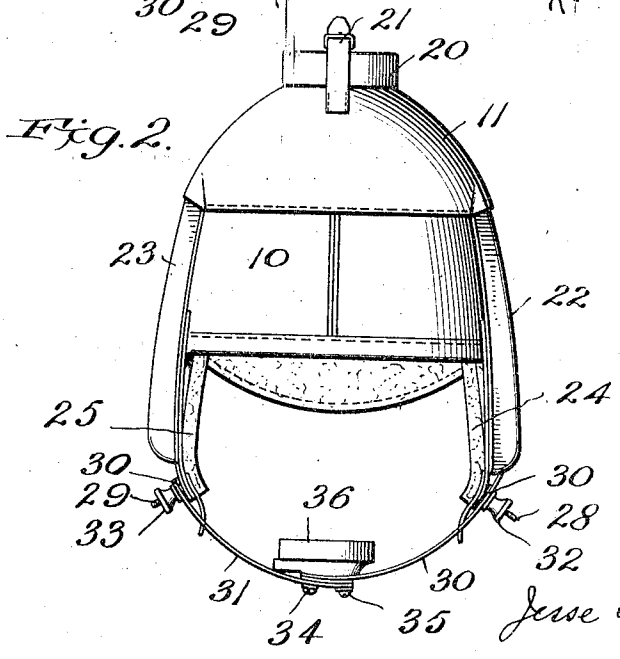


Fig. 2.



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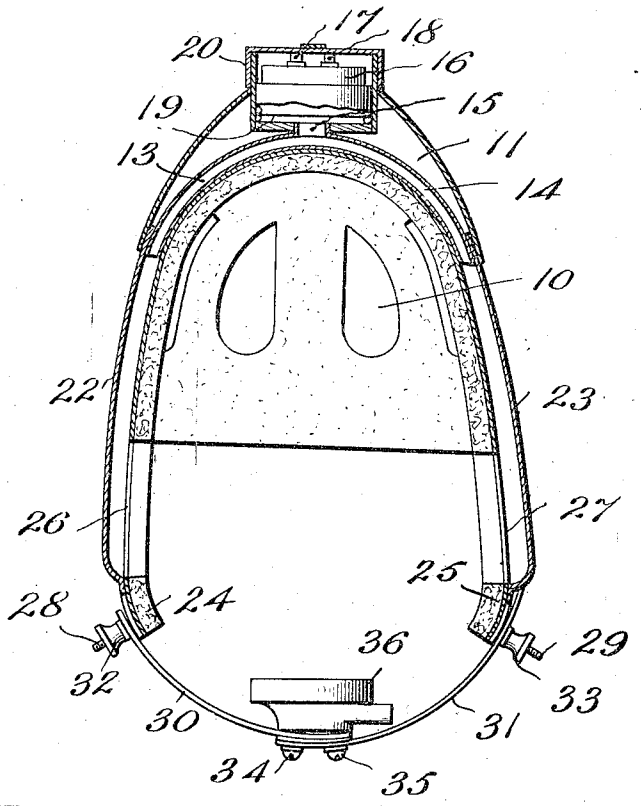
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2 SHEETS—SHEET 2.

Fig. 3.



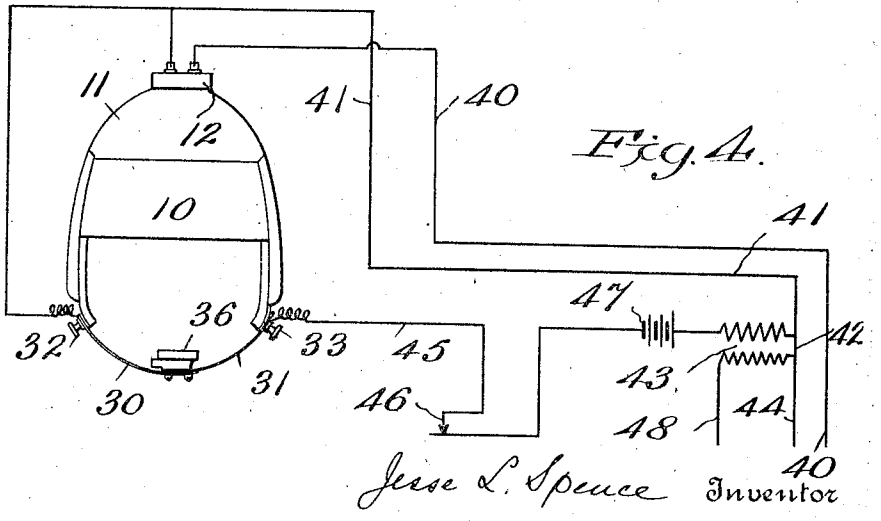


Fig. 4.

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UNITED STATES PATENT OFFICE.

JESSE LEE SPENCE, OF BROOKLYN, NEW YORK, ASSIGNOR TO STENTOR ELECTRIC MANUFACTURING CO. INC., A CORPORATION OF NEW YORK.

HELMET FOR AVIATORS.

1,235,851. Specification of Letters Patent. Patented Aug. 7, 1917.

Application filed March 16, 1916. Serial No. 84,549.

To all whom it may concern:

Be it known that I, JESSE L. SPENCE, a citizen of the United States, residing in Brooklyn, in the city of New York and State of New York, have invented certain new and useful Improvements in Helmets for Aviators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

It is well known that, where a pilot and one or more observers or passengers are traveling together in a motor-driven aeroplane, the conditions of extreme noise and high wind pressure render ordinary communication by speech practically impossible. It has been proposed to employ telephonic apparatus for this purpose, and this expedient has been found practical to a certain extent, although not by any means entirely satisfactory.

The present invention has reference to a novel form of helmet and a combination thereof with telephonic accessories, whereby (as I have found by experiment) extremely satisfactory results are obtained in carrying on a conversation under the circumstances mentioned.

My invention has the advantage of providing a simple, cheap and convenient means whereby those equipped therewith may speak to each other in any location wherein conditions are inauspicious for ordinary conversation. It is one advantage of the invention that it provides a helmet from which the telephonic auxiliary apparatus may be readily removed or applied at will, and I have therefore claimed herein certain peculiarities of the helmet *per se* independently of the auxiliary telephonic features.

In actual practice, for purposes of aviation, both the pilot and the observer or passenger should be equipped with my helmet, and indeed it will be readily understood from what follows that a group of more than two can be readily placed in mutual communication. As the equipment of each of those in communication is identical with that of the others, it will suffice to show and describe a single helmet made in accordance with my invention.

In the accompanying drawing is shown one embodiment of my invention. Figure 1 is a side view of the helmet in place on the wearer's head, Fig. 2 is a front view of the same removed from the wearer, Fig. 3 is a vertical median section of the same seen from behind, and Fig. 4 is a diagram illustrating an example of the electric circuits employed by preference.

Any well known form of helmet 10 may be equipped with my invention. For this purpose I prefer to fasten to the top of a simple helmet 10, the cap 11, which may be of leather fastened in place by sewing, as shown, and is furnished (preferably at the top) with a convenient circular pocket or receptacle 12. Beneath the cap 11 there is secured a transverse sound chamber, preferably of some light metal, forming two passages 13 and 14, extending in opposite directions laterally from an upright pipe 15.

The pocket 12 is made to hold snugly a suitable telephonic receiver 16 and its usual casing, which is provided with any suitable terminals 17, 18 and a diaphragm 19 preferably mounted as set forth in my U. S. Letters Patent No. 1,112,392 although this is not essential to my present invention. The sound pipe 15 enters the bottom of the pocket 12, and registers with the usual opening of the receiver 16, as shown in Fig. 3. I prefer to supply a cover 20, which may be fastened over the pocket 12 by the strap 21.

The transverse passages 13 and 14 taper outward from the narrow pipe, 15, as shown in dotted lines in Fig. 1, and lead to passages through the ducts 22, 23, preferably made of leather. These passages terminate at the ear-tabs 24, 25, through which extend an ear opening 26, 27, into said passages. It will be seen that, when the helmet is in place, the wearer's ears are guarded from outside atmospheric sounds, while the sounds produced in the receiver 16 are suitably enhanced by the flaring passages 13, 14, and are brought directly to the wearer's ears. I have found that this produces a much more satisfactory and intelligible transmission of speech, under aviating conditions, than the ordinary head phone, or its equivalent, wherein the receivers are supported at the wearer's ears.

In order to provide a perfectly convenient support for a telephonic transmitter, which may, at the same time, be easily removed when desired, I furnish screw pegs 28, 29 on the ear tabs over which the two-part metal bridge 30, 31 may be slipped, the ends of said bridge being slotted, as shown in Fig. 1. The thumb screws 32, 33 are

screwed over the pegs 28, 29 and hold the bridge at the desired angle by firm pressure upon its ends.

At their overlapping ends in the middle of the bridge, the two parts 30 and 31 are suitably insulated from each other and serve to conduct current to the two terminals 34, 35 of a telephone transmitter 36 carried by the bridge.

It is clear that the transmitter can be easily adjusted both as to angle and distance for the individual wearer by loosening thumb screws 32 and 33, placing the bridge and transmitter as desired, and again tightening the screws. It is to be understood that I do not limit myself to use of a transmitter so arranged as to receive current from the two parts of a supporting bridge.

Where two or more persons are intended to be placed in communication, each is equipped with one of the helmets described, and transmission is accomplished by any well known cable 37. This has a circuit closing jack 38 at its end, which is brought into proper connection with the circuit wires on the helmet by being pushed into a suitable socket 39 on the helmet. The arrangement of the wires leading from the socket in question to the transmitter and receiver may be greatly varied, and in Fig. 4 I have shown in diagram an example of a three-wire telephonic system which is applicable to my invention, it being understood that the diagram here shown is illustrative of the apparatus at each end of the line where two are speaking.

One terminal of the receiver gets current over the wire 40 from one terminal of the transformer secondary at the other end of the line; while the opposite terminal is connected on the one hand to one transmitter terminal 30, and on the other hand to the conductor 41 leading to a common connection 42 between the primary and secondary of the transformer 43. From 42 a wire 44 leads to a terminal on the secondary of the transformer at the other end of the line. From the terminal 31 of the transmitter a wire 45 leads through the foot switch 46 to one terminal of the battery 47, whose opposite terminal is connected with that end of the transformer primary opposite to the connection 42. The wire 48 from the transformer secondary leads to one terminal of the receiver at the other end of the line, and so corresponds to the wire 40. By closing or opening the foot switch 46, the aviator can bring his transmitter into or out of circuit at will, thus improving his hearing when not wishing to speak.

Many modifications of the various features of my invention may be made without departing from my invention, and I do not limit myself to the details herein shown and described.

What I claim is—

1. A helmet provided with a pocket adapted to hold a telephonic receiver, ear tabs on the helmet, and passages leading from said pocket to said ear tabs.

2. A helmet provided with a pocket adapted to hold a telephonic receiver, ear tabs on the helmet, and flaring passages leading from said pocket to said ear tabs.

3. A helmet provided with a pocket for a telephonic receiver, a flaring tube leading away from said pocket, an ear tab and a suitable conduit leading from said tube to an opening inside of said ear tab.

4. A helmet, a pocket on top of same adapted to hold a telephonic receiver, a transverse conduit beneath said pocket communicating with the same by an opening, and ear tabs having inside openings in communication with the opposite ends of said transverse conduit.

5. A helmet, a cap covering the top thereof, a pocket carried by said cap adapted to hold a telephonic receiver, ear tabs having inside openings, a transverse conduit under said cap having an opening into said pocket and communicating at its outer ends with said openings in the ear tabs.

6. A helmet, a cap covering the top thereof, a pocket carried by said cap adapted to hold a telephonic receiver, ear tabs having inside openings, a transverse metallic conduit under said cap flaring in both directions away from a middle opening into said pocket and communicating at its outer ends with said openings in the ear tabs.

7. A helmet, a pocket, a telephonic receiver therein, ear tabs on the helmet, a pipe registering with the openings in said receiver and leading out of said pocket, and flaring conduits leading from said pipe to openings inside said ear tabs.

8. A helmet, a bridge composed of two mutually insulated metal parts, a telephonic transmitter carried by said bridge and suitably connected therewith for speech transmission, and means for adjustably fixing the ends of said bridge to said helmet, said means being adapted to facilitate electric connection between the two parts of said bridge and external conductors.

9. A helmet, ear tabs thereon having interior openings, a telephonic receiver on said helmet and flaring passages leading from the opening of said receiver to said openings, a bridge adjustably fixed at its ends on said helmet, and a telephonic transmitter on said bridge.

In testimony whereof, I have affixed my signature.

JESSE LEE SPENCE.