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(54) Title: WIRELESS TELEPHONE HEADSET BUILT INTO EYEGASSES

(57) Abstract: The present invention relates to a wireless telephone headset for communicating with a telephone, wherein the headset is built into an eyeglass frame, which includes a first temple and a second temple connected by a middle portion and the eyeglass frame has an interior and exterior portions. The headset includes an earpiece coupled to the first temple, a microphone coupled to the second temple, a transceiver circuit coupled to the first temple, wherein the transceiver circuit is connected to the earpiece via a first set of electrical wires and the transceiver circuit is connected to the microphone via a second set of electrical wires; wherein the first set of electrical wires and the second set of electrical wires are coupled to the eyeglass frame; wherein the transceiver circuit further comprises an actuation contact, which includes an open position and a closed position; and wherein when the actuation contact is in the closed position, the headset wirelessly communicates with the telephone and when the actuation contact is in the open position, the headset does not wirelessly communicate with the telephone.

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WIRELESS TELEPHONE HEADSET BUILT INTO EYEGLASSES

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention relates a field of wireless telephone headsets. Specifically, the
5 present invention relates to a wireless telephone headset built into an eyeglass frame.

Background Art

In today's technology, telephone headsets are frequently employed to carry out
telephone conversations without having to hold a telephone in the hands. Use of such
10 headsets is not only a convenience, but also a safety measure. An example of such safety
measure would be hands-free use of a cellular telephone while driving. In some regions,
hands-free use of the cellular telephone while driving is a law.

FIG. 1 is an example of a typical prior art telephone headset 100. The headset 100
includes a frame 106. A microphone 102 and a speaker 104 are attached to the frame 106.
15 The microphone 102 is placed at one end of a microphone holder 112. The other end of the
microphone holder 112 is coupled to the frame 106. As shown in FIG. 1, the speaker 104 is
coupled to the other end of the microphone holder 112. The frame 106 further includes a
rotational mechanism 114, which allows microphone holder 112 to rotate, as shown by a
curved double-sided arrow A. By expanding or contracting an expandable section 110,
20 coupled to frame 106, accommodates different users' head sizes. Contraction or expansion of
the expandable section 110 is shown by a double-sided arrow B. A wire 118 with a plug 116
connects headset 100 to a telephone to allow a user to perform her conversations using the
headset 100.

To use the headset 100, a user would place it over her head with the speaker 104
25 being placed against one ear and a support 108 of the frame 106 placed on the opposite side
of the head near the other ear. The microphone 102 would be placed in the vicinity of the
user's mouth. A plug 116 would be plugged into a telephone to assist the user in making and
receiving telephone calls.

Other headsets may include just an earpiece and a microphone on one wire without being attached to a headset frame. With the advance of the technology, wireless headsets are also used.

5 Nonetheless, use of the headset 100 can be inconvenient and bulky. Some of the problems associated with the headset 100 would be for users wearing eyeglasses (prescription, non-prescription, sunglasses, and other). If a conventional headset is used, its frame interacts with eyeglass frame temples causing its user great discomfort. Additionally, use of such headset can tilt the eyeglasses and distort vision, thereby disorienting the user. Further, even if frameless headset is used, the earpiece placed inside user's ear will interact
10 with eyeglass frame temples through the ear and, thus, constantly falling out of the user's ear. Also, headset wires cause users great discomfort and may tilt, throw off and break the eyeglasses. Numerous other problems exist with the use of a headset and eyeglasses together. Therefore, there is a need to provide a wireless telephone headset that is convenient for users wearing eyeglasses.

BRIEF SUMMARY OF THE INVENTION

The present invention is directed to a wireless telephone headset built into an eyeglass
5 frame. The present invention includes an earpiece, a microphone, a transceiver and a wiring
circuitry all coupled to an eyeglass frame.

In an embodiment, the present invention includes an earpiece coupled to a first temple
of the eyeglass frame, whereas the microphone is coupled to a second temple of the eyeglass
frame. A transceiver circuit is coupled to the first temple of the eyeglass frame. The
10 transceiver circuit is electrically coupled to the speaker and the earpiece by having electrical
wires run through the eyeglass frame. The transceiver circuit communicates with a
transceiver installed on a telephone. The transceiver circuit further includes an actuation
contact. Upon receipt of a call, user will activate transceiver circuit by pressing the actuation
contact. This allows the eyeglass frame transceiver circuit and the telephone transceiver
15 circuit to communicate with each other, and, in turn, allowing the user to employ the wireless
eyeglass set to have a telephone conversation.

Other embodiments of the present invention include an earpiece, a microphone, and a
transceiver circuit built into the same eyeglass temple.

Additionally, alternate embodiments of the present invention include the earpiece, the
20 microphone, and the transceiver circuit being placed in the interior portions of the eyeglass
temples. A user may pull out the microphone and the earpiece to carry out the telephone
conversations. An actuation contact of the transceiver circuit can be placed on the exterior
portion of the eyeglass temple.

In an embodiment, the transceiver circuit wirelessly communicates with the telephone
25 by transmitting/receiving signals to/from a telephone's transceiver. A Blue Tooth technology
can be used to carry out the communications between the transceiver circuit built into
eyeglasses and the telephone's transceiver circuit.

Brief Description of the Drawings

In the drawings, like reference numbers indicate identical or functionally similar elements. Additionally, the left-most digit(s) of a reference number identifies the drawing in which the reference number first appears.

FIG. 1 is an example of a conventional telephone headset.

FIG. 2 illustrates an eyeglass telephone set having an earpiece and a microphone coupled to different eyeglass temples, according to the present invention.

FIG. 3a illustrates an eyeglass telephone set having an earpiece and a microphone being placed inside eyeglass temples, according to the present invention.

FIG. 3b illustrates exterior and interior portions of an eyeglass temple, according to the present invention.

FIG. 3c illustrates a transceiver coupled to an eyeglass temple, according to the present invention.

FIG. 4 illustrates an eyeglass telephone set having an earpiece and a microphone built into the same eyeglass temple, according to the present invention.

FIG. 5 illustrates an eyeglass telephone set having an earpiece built into an eyeglass temple and a microphone built into a glass-holding frame, according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

1. Overview.

The present invention is directed to a field of wireless headsets. More specifically, the present invention is a wireless headset built in to a pair of eyeglasses. The eyeglasses can be prescription eyeglasses, sunglasses, non-prescription eyeglasses, safety eyeglasses, eyeglass masks, or any other type of eyewear. The present invention allows a user to simultaneously use a telephone and a headset without taking off eyeglasses or being inconvenienced by wearing a bulky headset with eyeglasses. Furthermore, the present invention also addresses safety concerns for users wearing eyeglasses and telephone headsets while performing various tasks, such as driving, operating machinery, etc.

The present invention allows wireless communication with a telephone without having to put on a headset. For example, someone operating a vehicle and desiring to make a telephone call would not have to be distracted to put on a headset. Instead, if eyewear is being worn, the individual would activate the circuitry within the eyewear and proceed with making or answering telephone calls.

2. Wireless Telephone Headset Built Into Eyeglasses.

FIG. 2 illustrates an embodiment of an eyeglass telephone set 200. The eyeglass telephone set 200 includes a frame 201 having glass portions 202, a first temple 204, and a second temple 206. Temples 204 and 206 are attached to the frame 201 by means of hinges, screws, glue, welding or any other binding material and/or method. The frame 201 and temples 204, 206 can be manufactured from plastic, metal, or any other material. A combination of the frame 201, glass portions 202, first temple 204, second temple 206 and the binding materials can be referred to as an eyeglass set.

The eyeglass telephone set 200 further includes a microphone 210, an earpiece 208, and a transceiver circuit 220. The microphone 210 is attached via a microphone arm 214 to the temple 204 at a pivotal point 232. The earpiece 208 is attached via an earpiece arm 212 to the temple 206 at a pivotal point 234. The transceiver circuit 220 is coupled to the temple 206.

The microphone 210, earpiece 208, and the transceiver circuit 220 are electrically wired through the frame 201 and the temples 204, 206. The microphone 210 is electrically

coupled to a microphone electrical wire 216 that runs along the microphone arm 214 to the pivotal point 232. At the pivotal point 232, the microphone electrical wire 216 is coupled to a frame wire 224. The frame wire 224 runs along the frame 201, as shown by dashed lines in FIG. 1, and is coupled to the transceiver circuit 220. The earpiece 208 is electrically coupled to an earpiece electrical wire 218 that runs along the earpiece arm 212 to the pivotal point 234. At the pivotal point 234, the earpiece electrical wire 218 is coupled to the frame wire 224 that is further connected to the transceiver circuit 220. The electrical wires (216, 218, 224) can be attached to exterior portions of the frame 201 and/or temples 204, 206.

Alternatively, the electrical wires can be placed in the interior portions of the frame 201 and/or temples 204, 206, as described below.

The frame 201 and temples 204, 206 further include an interior portion 263 and an exterior portion 261. The interior portion 263 is an opening going throughout the frame 201 and the temples 204, 206. Referring to FIG. 3b, a portion 350 of the frame 201 (or the temples 204, 206) is shown. The exterior portion 261 is further shown enclosing the hollow interior portion 263. In an embodiment, an electrical wire can be placed through the interior portion of the frame 201 or the temples 204, 206 (not shown in FIG. 3b).

According to the embodiment of FIG. 1, the frame wire 224 is placed in the interior portion 261 of the respective frame 201 and temples 204, 206. Additionally, the earpiece arm 212 and the microphone arm 214 can include the exterior portion 261 and the interior portion 263. Thus, the earpiece electrical wire 218 can be placed in the interior portion 263 of the earpiece arm 212. Similarly, the microphone electrical wire 216 can be placed in the interior portion 263 of the microphone arm 214.

Pivotal mounting at pivotal point 232, allows microphone arm 214 to rotate along curved arrow A in relation to frame 201 and temples 204, 206. Such rotation allows microphone 210 to be properly adjusted in relation to user's mouth. Analogously, the earpiece arm 212, mounted at pivotal point 234, rotates along curved arrow B in relation to the frame 201 and the temples 204, 206. This allows the user to place the earpiece 208 inside or near the user's ear.

The transceiver circuit 220 wirelessly communicates with a telephone transceiver 252 coupled to telephone 250, as shown in FIG. 1. The transceiver circuit 220 and the telephone transceiver 252 communicate by exchanging signals 254 and 256. In the present

embodiment, such wireless communication is achieved using Blue Tooth technology. As can be understood by one having ordinary skill in the relevant art, other methods of wireless communication between the transceiver circuit 220 and the telephone transceiver 252 are possible. The transceiver circuit 220 and the telephone transceiver 252 can have a specific distance range at which both are able to communicate with each other without any
5 interruptions.

An embodiment of the transceiver circuit 220 is shown in FIG. 3c. FIG. 3c illustrates the transceiver circuit 220 coupled to a portion 350 of the frame 201 or temples 204, 206. The transceiver circuit 220 is coupled to the exterior portion 263. Alternatively, the
10 transceiver circuit 220 is coupled to the interior portion 261.

An embodiment of the transceiver circuit 220 includes a power source 357, an actuation contact 355 and a circuitry 359. The power source 357 powers the transceiver circuit 220, the microphone 210 and the earpiece 208 to allow usage of the telephone eyeglass set 200. The actuation contact 355 activates or deactivates the transceiver circuit
15 220. Activation of the transceiver circuit 220 allows a user to employ telephone eyeglass set 200 to make and receive telephone calls. Deactivation of the transceiver circuit 220 terminates user's ability to make and receive telephone calls. In this embodiment, the actuation contact 355 is a push button switch having an "on" and an "off" positions (not shown). Pressing the button to "on" position will activate the telephone eyeglass set 200.
20 Pressing the button to "off" position will deactivate the telephone eyeglass set 200. In an alternative embodiment, the actuation contact 355 is any other switch capable of activating and deactivating the telephone eyeglass set 200.

The power source 357 can be a battery. Upon drainage, the battery can be replaced or recharged. As can be understood by one having ordinary skill in the relevant art, telephone
25 eyeglass set 200 may include at least one power source 357. The power source 357 does not have to be coupled to the transceiver circuit 220 and can be placed anywhere on the frame 201 or the temples 204, 206. Also, the telephone eyeglass set 200 can include at least one power source 357.

Referring back to FIG. 1, the position of the transceiver circuit 220 is not limited to
30 the temples 204, 206 or the frame 201. Similarly, the earpiece 208 and the microphone 210 are not limited to the positions described in FIG. 1, as illustrated below.

FIG. 3a illustrates an alternate embodiment of the telephone eyeglass set 200. The frame 201 and the temples 204, 206 are described above with respect to FIG. 2. The telephone eyeglass set 200 includes an earpiece 310, a microphone 314, and a transceiver circuit 306. The earpiece 310 is coupled to an earpiece arm 308. The earpiece arm 308 extends in and out of the interior portion of the first temple 206, as shown by double-sided arrow C. The earpiece 310 is located on the outside of the temple 206 when a portion of the earpiece arm 308 is taken out of the temple 206, while another portion of the earpiece arm 308 remains in the interior portion of the temple 206. When the user desires to use the telephone eyeglass set 200, she slides out the earpiece arm 308 and places it near her ear. The earpiece arm 308 can be further adjusted to be closer to the user's ear by pulling it up/down or rotating it.

The microphone 314 is coupled to a microphone arm 312. Similarly to the earpiece arm 308, the microphone arm 312 extends in and out of the interior portion of the temple 204, as shown by the double-sided arrow D. The microphone 314 is located on the outside of the temple 204 when a portion of the microphone arm 312 is taken out of the temple 204, while another portion of the microphone arm 312 remains in the interior portion of the temple 204. When the user desires to speak into the microphone 314, she slides the microphone arm 312 out of the interior portion of the temple 204. The microphone arm 312 can be further adjusted to be closer to the user's mouth by pulling it up/down or rotating it.

The microphone 314 and the earpiece 308 are coupled to the transceiver circuit 220 (not shown in FIG. 3a). The electrical wiring of these components and the operation is described above with respect to FIG. 1.

FIG. 4 illustrates another embodiment of the eyeglass telephone set 200. The frame 201 and the temples 204, 206 are described above with respect to FIG. 2. The eyeglass telephone set 200 includes a microphone 414, an earpiece 412, and a transceiver circuit 220. In this embodiment, the microphone 414 is coupled to the microphone arm 404. The microphone arm 404 extends in and out of the interior portion of the temple 206, as shown by the double-sided arrow F. The microphone 414 is located on the outside of the temple 206 when a portion of the microphone arm 404 is taken out of the temple 206, while another portion of the microphone arm 404 remains in the interior portion of the temple 206.

The earpiece 412 is coupled to the earpiece arm 402. The earpiece arm 402 extends in and out of the interior portion of the first temple 206, as shown by double-sided arrow E. The earpiece 412 is located on the outside of the temple 206 when a portion of the earpiece arm 402 is taken out of the temple 206, while another portion of the earpiece arm 402 remains in the interior portion of the temple 206.

The transceiver circuit 220 is also located on the first temple 206 along with the earpiece 412 and the microphone 414. The electrical wiring between these elements is similar to the one described above in FIG. 1.

FIG. 5 illustrates another embodiment of the eyeglass telephone set 200. The frame 201 and the temples 204, 206 are described above with respect to FIG. 2. The eyeglass telephone set 200 includes a microphone 514 that is coupled to the microphone arm 504. The microphone arm 504 is able to extend in and out of the interior portion of frame 201, as shown by double sided arrow G. Other elements of the eyeglass telephone set 200 are similar to the ones described above.

In the embodiments of FIGS. 3a, 4, and 5, the location of the earpiece, the microphone and the transceiver circuit can be interchanged. Further, the earpiece, the microphone, and the transceiver circuit can be appropriately sized to improve aesthetical appearance of the eyeglass telephone set 200. The earpiece arm and the microphone arm can automatically extend in and out of the interior portions of the frame 201 and temples 204, 206, if so desired.

3. Conclusion.

Example embodiments of the methods and components of the present invention have been described herein. As noted elsewhere, these example embodiments have been described for illustrative purposes only, and are not limiting. Other embodiments are possible and are covered by the invention. Such embodiments will be apparent to persons skilled in the relevant art(s) based on the teachings contained herein. Thus, the breadth and scope of the present invention should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the following claims and their equivalents.

1 What is Claimed is:

2 1. A wireless telephone headset for communicating with a telephone, wherein the
3 headset is built into an eyeglass frame, which includes a first temple and a second temple
4 connected by a middle portion and the eyeglass frame has an interior and exterior portions,
5 comprising:

6 an earpiece coupled to the first temple,

7 a microphone coupled to the second temple,

8 a transceiver circuit coupled to the first temple,

9 wherein said transceiver circuit is connected to said earpiece via a first set of electrical
10 wires and said transceiver circuit is connected to said microphone via a second said of
11 electrical wires;

12 wherein said first set of electrical wires and said second set of electrical wires
13 are coupled to the eyeglass frame;

14 wherein said transceiver circuit further comprises an actuation contact, which
15 includes an open position and a closed position; and

16 wherein when said actuation contact is in said closed position, the headset
17 wirelessly communicates with the telephone and when said actuation contact is in said
18 open position, the headset does not wirelessly communicate with the telephone.

19

20 2. The headset of claim 1, wherein said first and said second set of electrical
21 wires are coupled to the interior portion of the eyeglass frame.

22

23 3. The headset of claim 1, wherein said earpiece is coupled to the eyeglass frame
24 using a first extendable arm.

25

26 4. The headset of claim 3, wherein said first extendable arm extends from the
27 interior portion of the eyeglass frame.

28

29 5. The headset of claim 3, wherein said first extendable arm is pivotally mounted
30 to the exterior portion of the eyeglass frame.

31

1 6. The headset of claim 1, wherein said microphone is coupled to the eyeglass
2 frame using a second extendable arm.

3
4 7. The headset of claim 6, wherein said second extendable arm extends from the
5 interior portion of the eyeglass frame.

6
7 8. The headset of claim 6, wherein said second extendable arm is pivotally
8 mounted to the eyeglass frame.

9
10 9. The headset of claim 1, wherein said transceiver circuit is coupled to the
11 interior portion of the eyeglass frame and said actuation contact is coupled to the exterior
12 portion of the eyeglass frame.

13
14 10. The headset of claim 1, wherein said transceiver circuit further comprises a
15 power source and wherein said power source is placed on the interior portion of the eyeglass
16 frame.

17 11. A wireless telephone headset for communicating with a telephone, wherein the
18 headset is built into an eyeglass frame, which includes an interior portion and an exterior
19 portion, comprising:

20 an earpiece coupled to a temple of the eyeglass frame,

21 a microphone coupled to said temple,

22 a transceiver circuit coupled to said temple,

23 wherein said transceiver circuit is connected to said earpiece via a first set of electrical
24 wires and said transceiver circuit is connected to said microphone via a second said of
25 electrical wires;

26 wherein said first set of electrical wires and said second set of electrical wires
27 are coupled to the eyeglass frame;

28 wherein said transceiver circuit further comprises an actuation contact, which
29 includes an open position and a closed position; and

1 wherein when said actuation contact is in said closed position, the headset
2 wirelessly communicates with the telephone and when said actuation contact is in said
3 open position, the headset does not wirelessly communicate with the telephone.
4

5 12. The headset of claim 11, wherein said first and said second set of electrical
6 wires are coupled to the interior portion of the eyeglass frame.
7

8 13. The headset of claim 11, wherein said earpiece is coupled to the eyeglass
9 frame using a first extendable arm.
10

11 14. The headset of claim 13, wherein said first extendable arm extends from the
12 interior portion of the eyeglass frame.
13

14 15. The headset of claim 13, wherein said first extendable arm is pivotally
15 mounted to the exterior portion of the eyeglass frame.
16

17 16. The headset of claim 11, wherein said microphone is coupled to the eyeglass
18 frame using a second extendable arm.
19

20 17. The headset of claim 16, wherein said second extendable arm extends from the
21 interior portion of the eyeglass frame.
22

23 18. The headset of claim 16, wherein said second extendable arm is pivotally
24 mounted to the eyeglass frame.
25

26 19. The headset of claim 11, wherein said transceiver circuit is coupled to the
27 interior portion of the eyeglass frame and said actuation contact is coupled to the exterior
28 portion of the eyeglass frame.
29

1 20. The headset of claim 11, wherein said transceiver circuit further comprises a
2 power source and wherein said power source is placed on the interior portion of the eyeglass
3 frame.

4 21. A wireless telephone headset for communicating with a telephone, wherein the
5 headset is built into an eyeglass frame, which includes an interior portion and an exterior
6 portions, comprising:

7 a listening means coupled to the eyeglass frame,

8 a speaking means coupled to the eyeglass frame,

9 a transceiver means coupled the eyeglass frame,

10 wherein said transceiver means is connected to said listening means via a first set of
11 electrical wires and said transceiver means is connected to said speaking means via a second
12 said of electrical wires;

13 wherein said first set of electrical wires and said second set of electrical wires
14 are coupled to the eyeglass frame;

15 wherein said transceiver means further comprises an actuation means, which
16 includes an open position and a closed position; and

17 wherein when said actuation means is in said closed position, the headset
18 wirelessly communicates with the telephone and when said actuation means is in said
19 open position, the headset does not wirelessly communicate with the telephone.

20
21 22. The headset of claim 21, wherein said first and said second set of electrical
22 wires are coupled to the interior portion of the eyeglass frame.

23
24 23. The headset of claim 21, wherein said listening means is coupled to the
25 eyeglass frame using a first extendable arm.

26
27 24. The headset of claim 23, wherein said first extendable arm extends from the
28 interior portion of the eyeglass frame.

29
30 25. The headset of claim 23, wherein said first extendable arm is pivotally
31 mounted to the exterior portion of the eyeglass frame.

1

2 26. The headset of claim 21, wherein said speaking means is coupled to the
3 eyeglass frame using a second extendable arm.

4

5 27. The headset of claim 26, wherein said second extendable arm extends from the
6 interior portion of the eyeglass frame.

7

8 28. The headset of claim 26, wherein said second extendable arm is pivotally
9 mounted to the eyeglass frame.

10

11 29. The headset of claim 21, wherein said transceiver means is coupled to the
12 interior portion of the eyeglass frame and said actuation means is coupled to the exterior
13 portion of the eyeglass frame.

14

15 30. The headset of claim 21, wherein said transceiver means further comprises a
16 power source and wherein said power source is placed on the interior portion of the eyeglass
17 frame.

18

19 31. A wireless telephone eyeglass headset, comprising:
20 an eyeglass set that includes an eyeglass frame and two temples extending from
21 opposite sides of the eyeglass holder;
22 a speaker;
23 a microphone;
24 a transceiver circuit coupled to the eyeglass set and in electrical connection with the
25 speaker and the microphone;
26 a speaker arm coupled to the eyeglass set and carrying the speaker and movable
27 between two positions one of which rendering the speaker accessible for use and the other
28 rendering the speaker inaccessible for use; and
29 a microphone arm coupled to the eyeglass set and carrying the microphone and
30 movable between two positions one of which rendering the microphone accessible for use
31 and the other rendering the microphone inaccessible for use.

1

2 32. The wireless telephone eyeglass headset of claim 31, wherein one of the two
3 positions of the speaker arm conceals the speaker arm within the eyeglass set.

4

5 33. The wireless telephone eyeglass headset of claim 31, wherein one of the two
6 position of the microphone arm conceals the microphone arm within the eyeglass set.

7

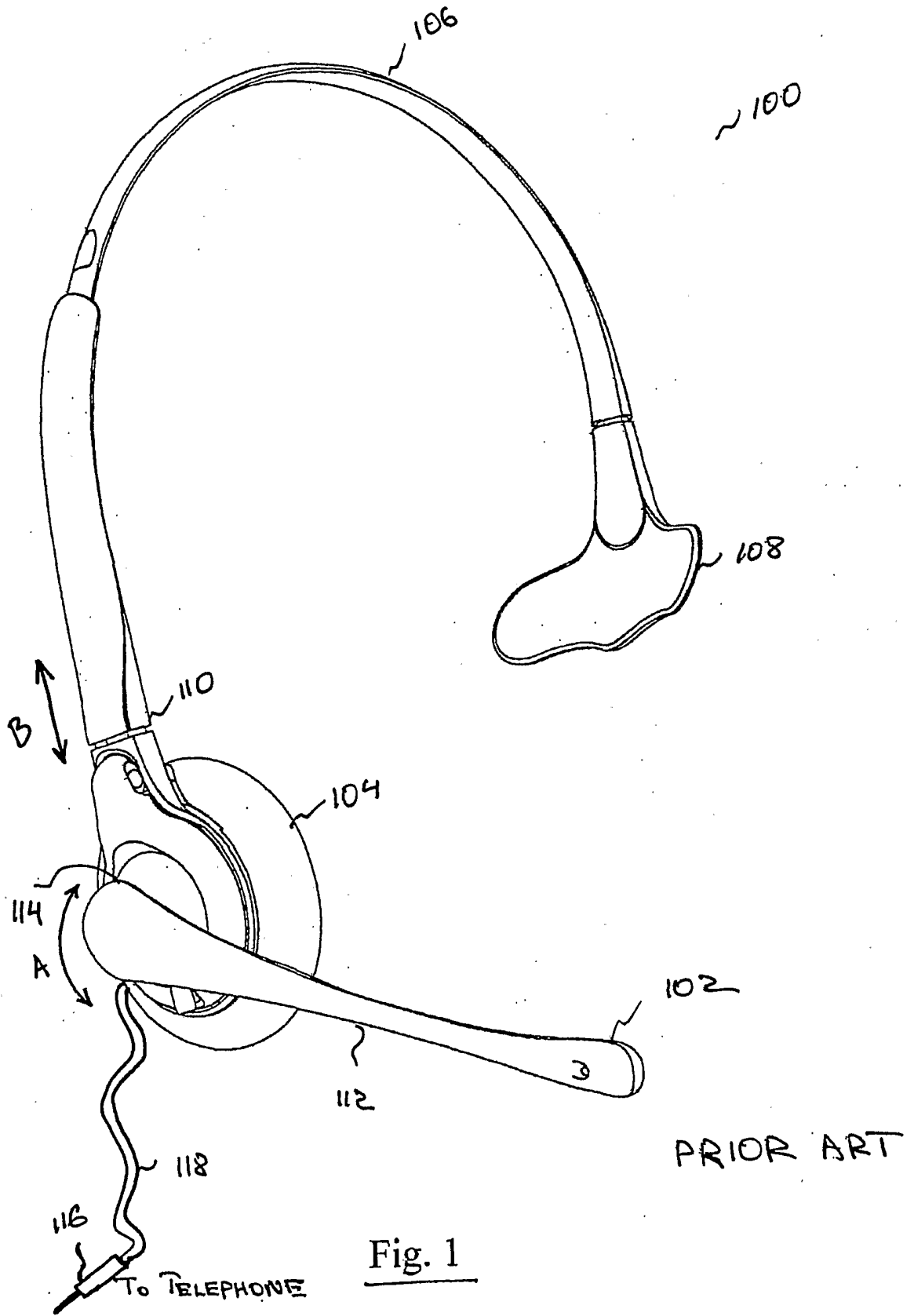
8 34. The wireless telephone eyeglass headset of claim 31 wherein at least one of
9 the speaker and microphone arms is pivotally coupled to the eyeglass set.

9

10 35. The wireless telephone eyeglass headset of claim 31 wherein at least one of
11 the speaker and microphone arms is slidably coupled to the eyeglass set.

12

13 36. The wireless telephone eyeglass headset of claim 31 further comprising an
14 actuator responsive to the speaker arm and the microphone arm being in the one of the two
15 positions that renders the speaker and the microphone accessible for use to enable wireless
16 communication and being responsive to the speaker arm and the microphone arm being in the
17 other of the two positions that renders the speaker and the microphone inaccessible to disable
18 the wireless communication.



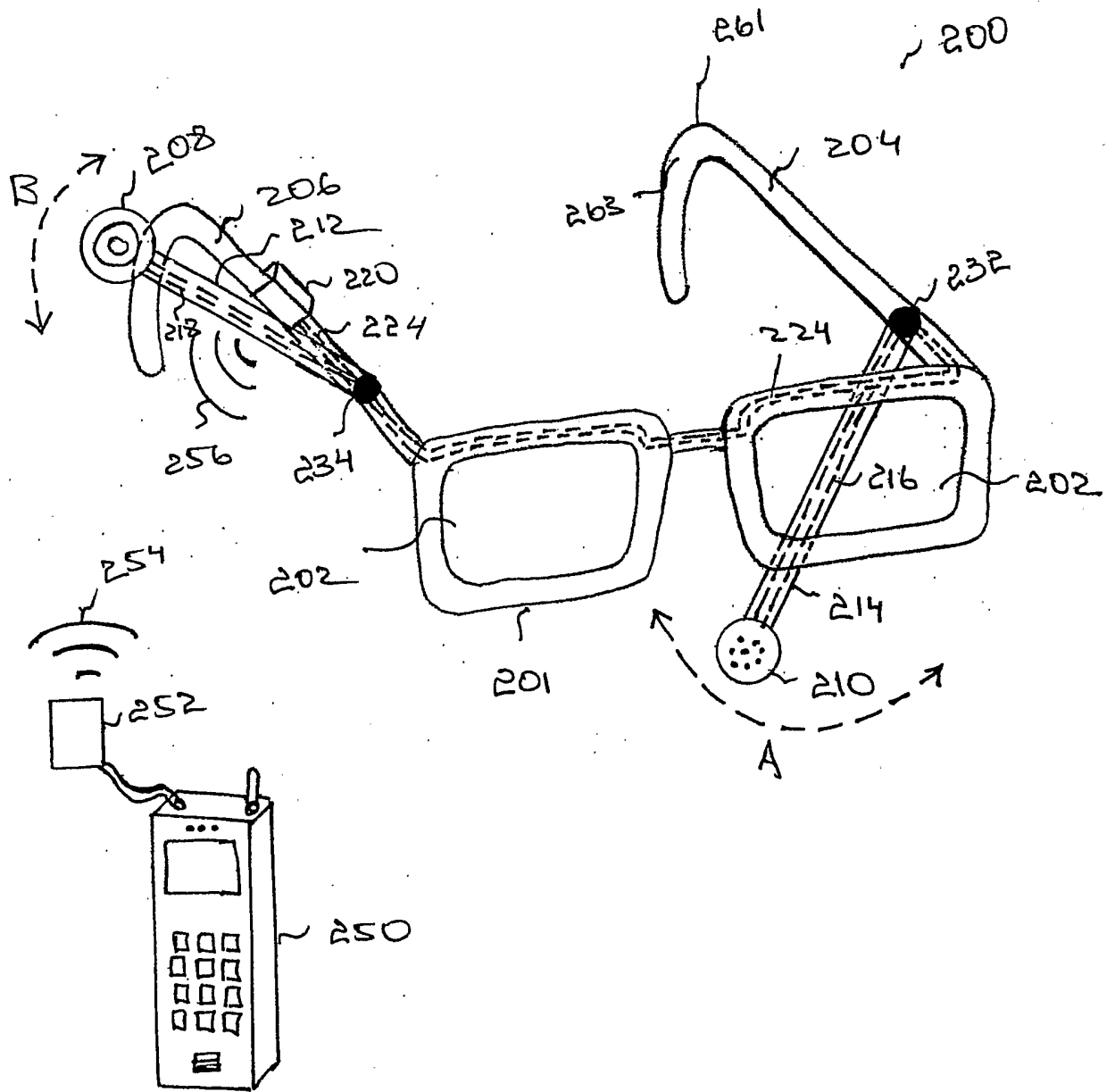


Fig. 2.

Fig. 3a.

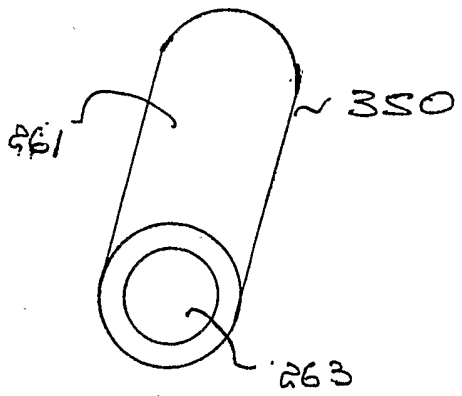
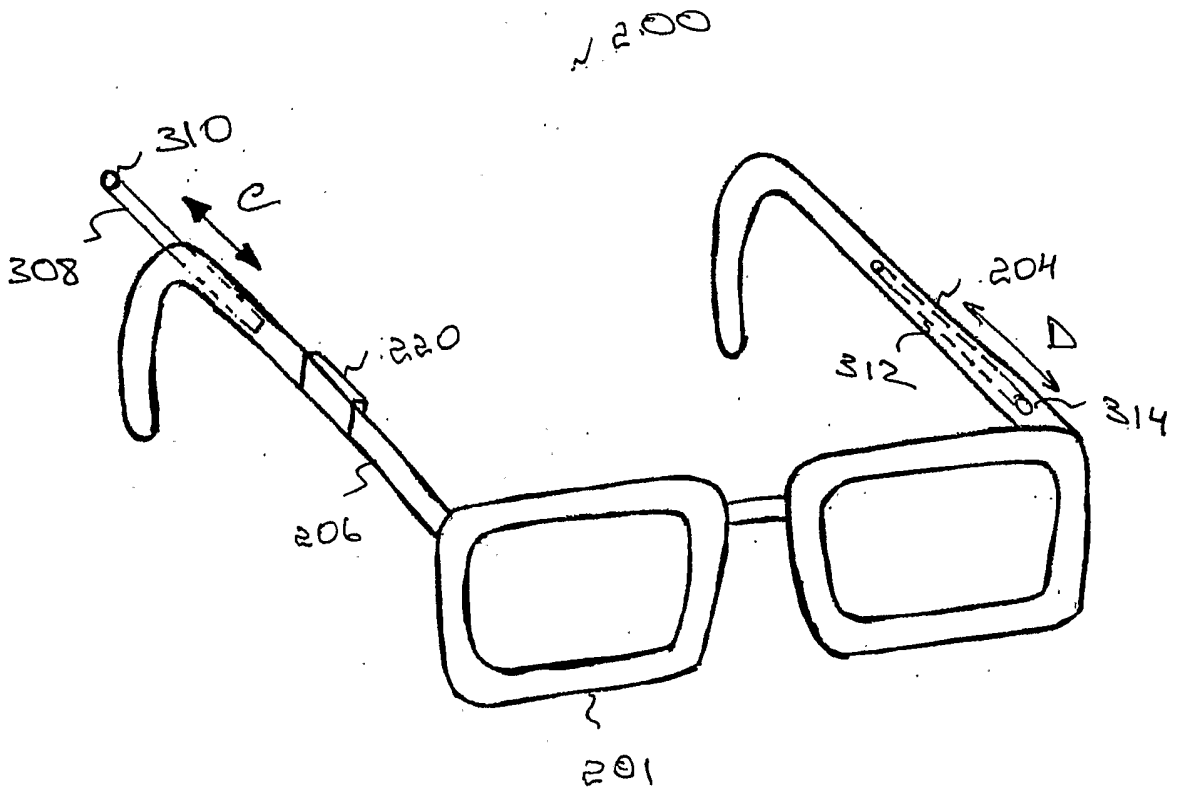


Fig. 3b.

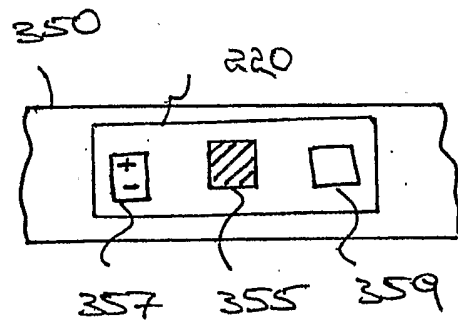


Fig. 3c.

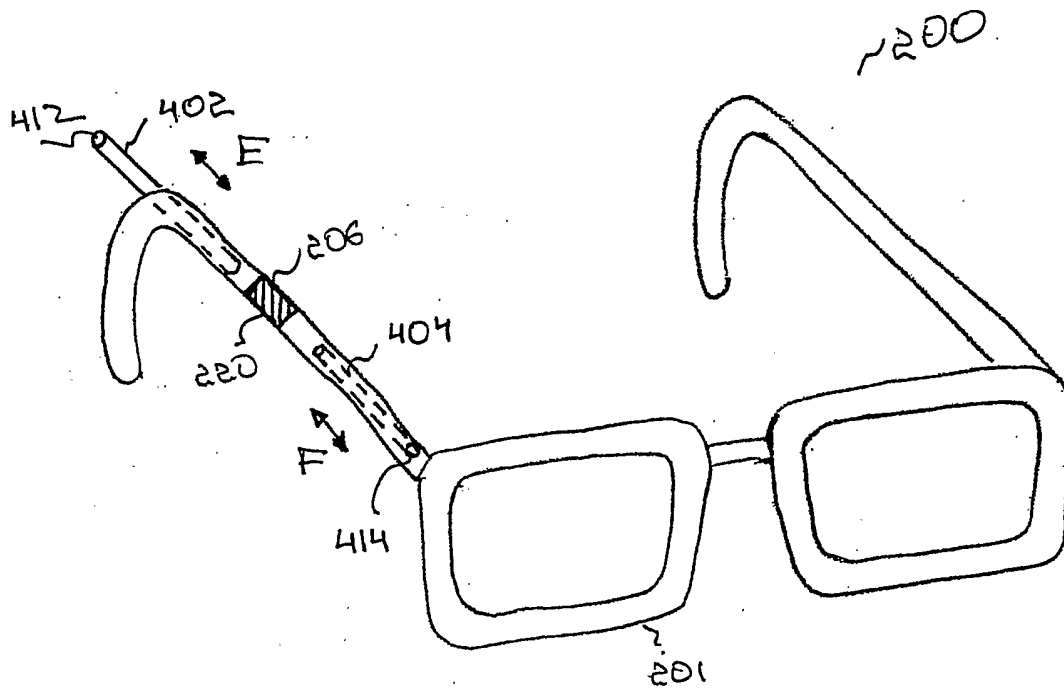


Fig. 4.

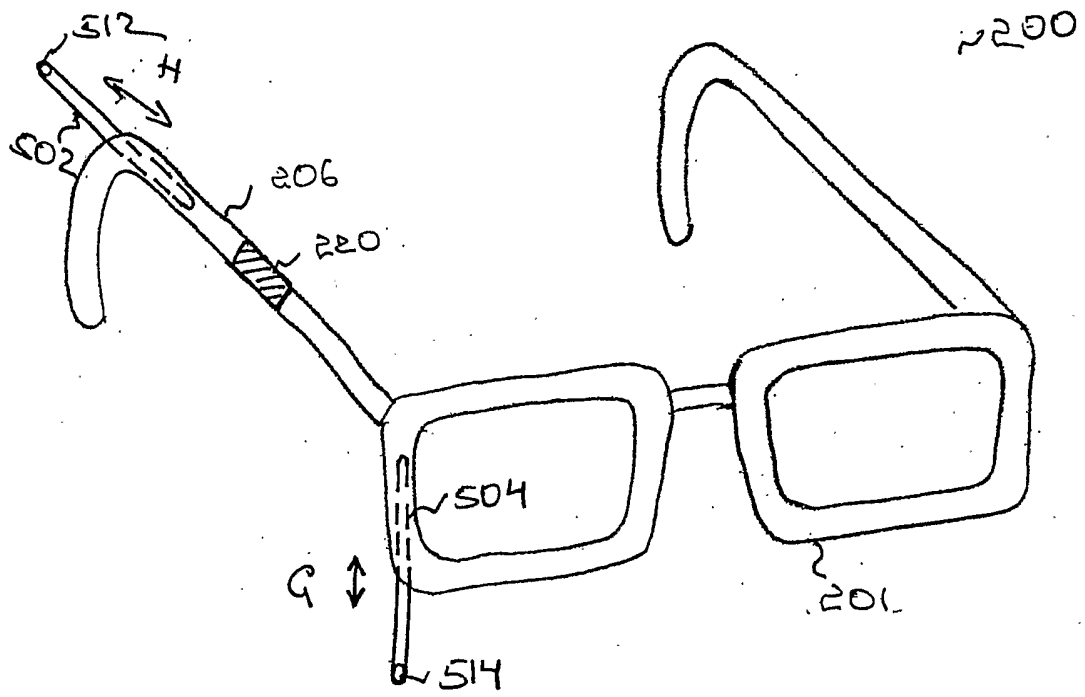


Fig. 5.