No. 864,858. PATENTED SEPT. 3, 1907.

H. G. PAPE.

AUTOMATIC CIRCUIT CLOSER.

APPLICATION FILED SEPT. 23, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

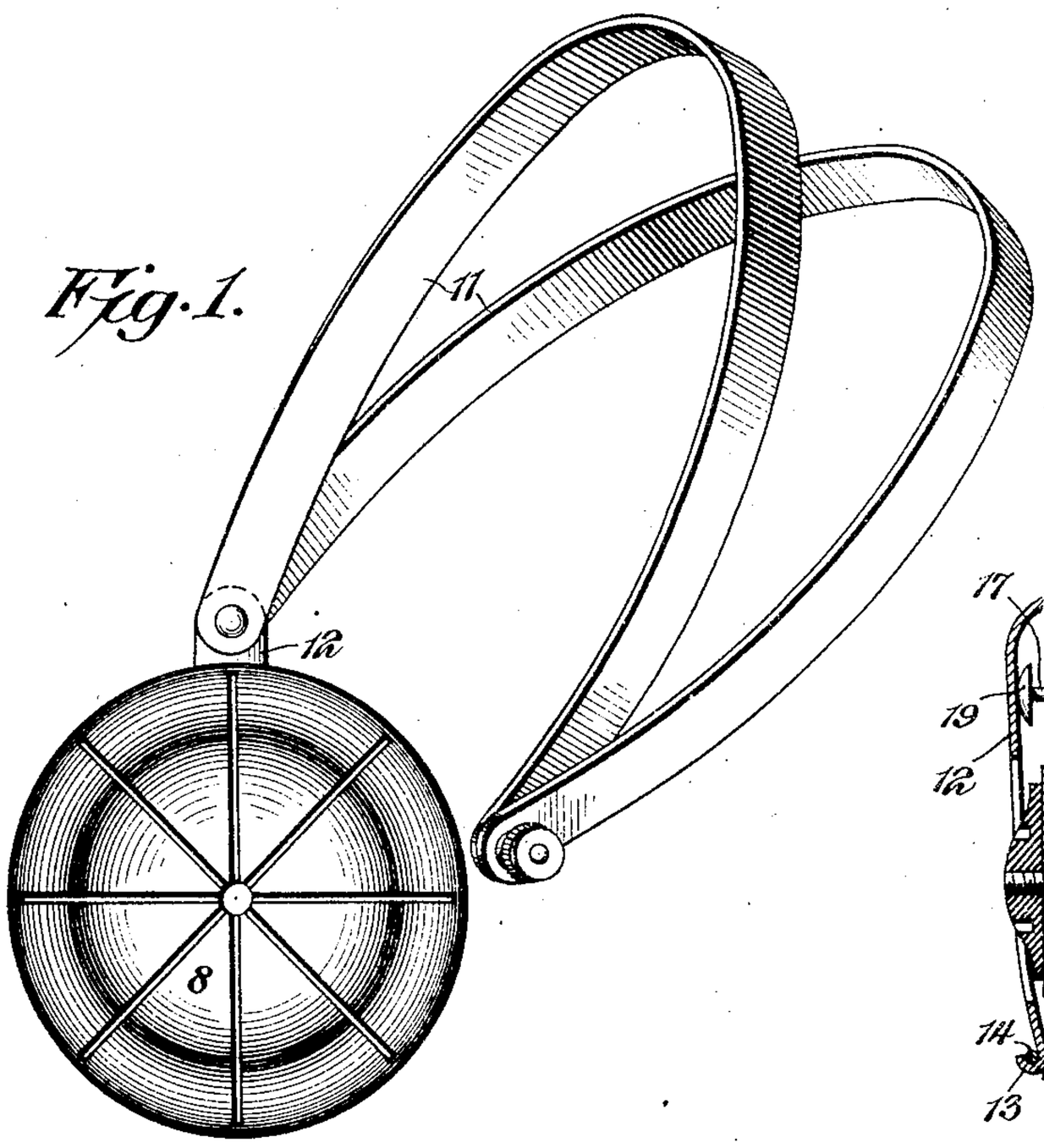


Fig. 2.

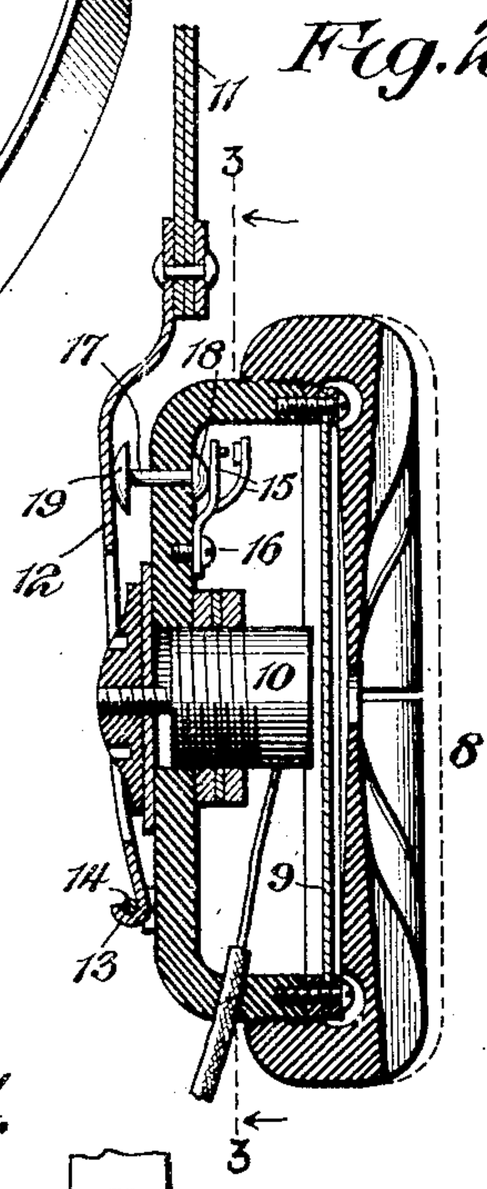


Fig. 3.

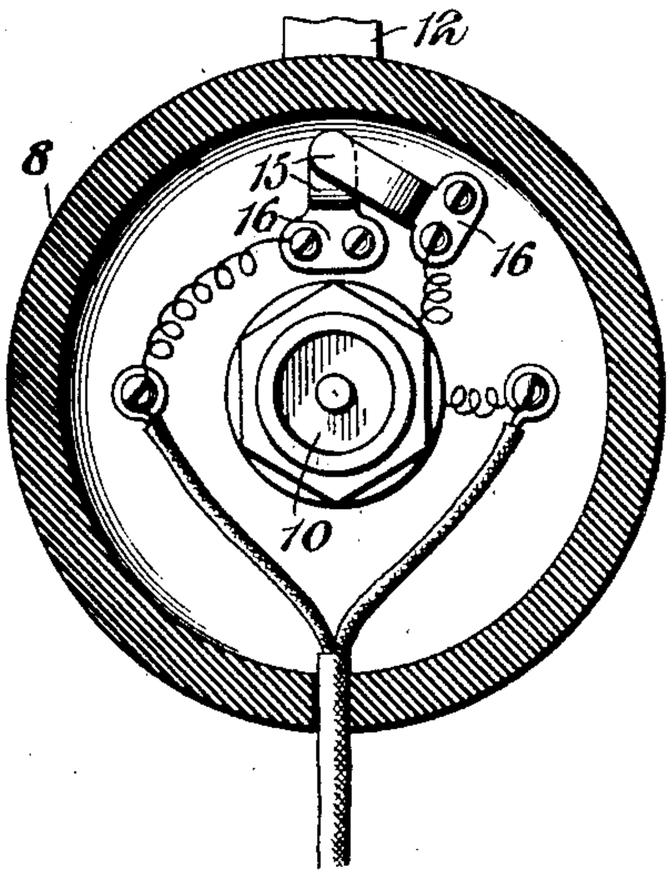
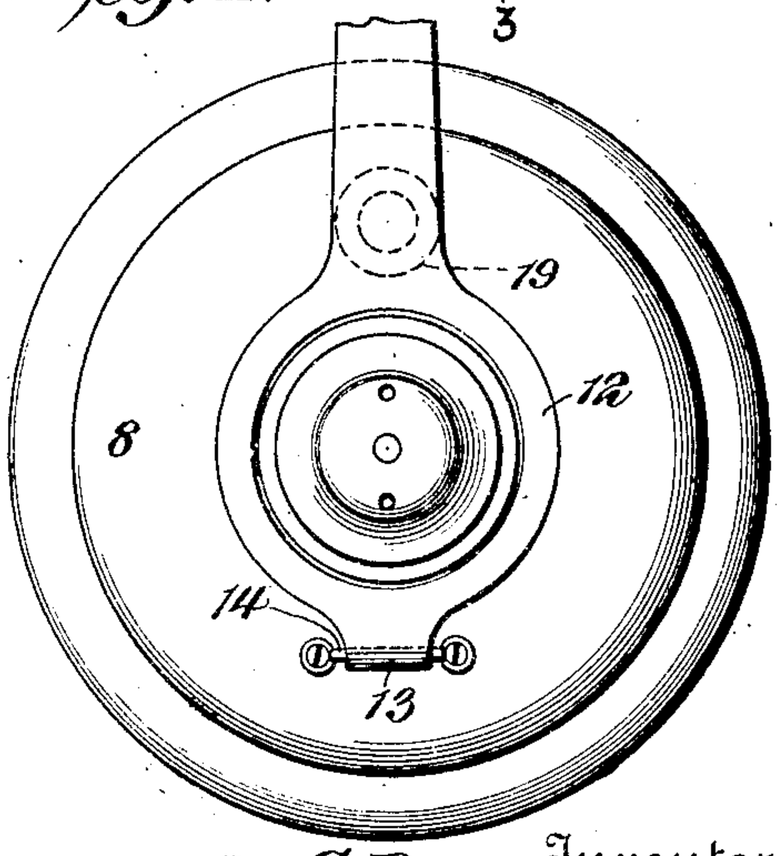


Fig. 4.



Witnesses.

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2 SHEETS—SHEET 2.

Fig. 5.

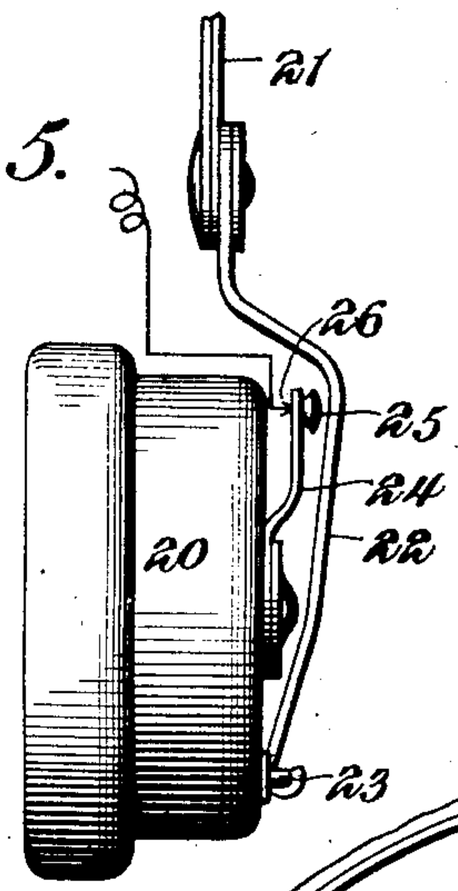
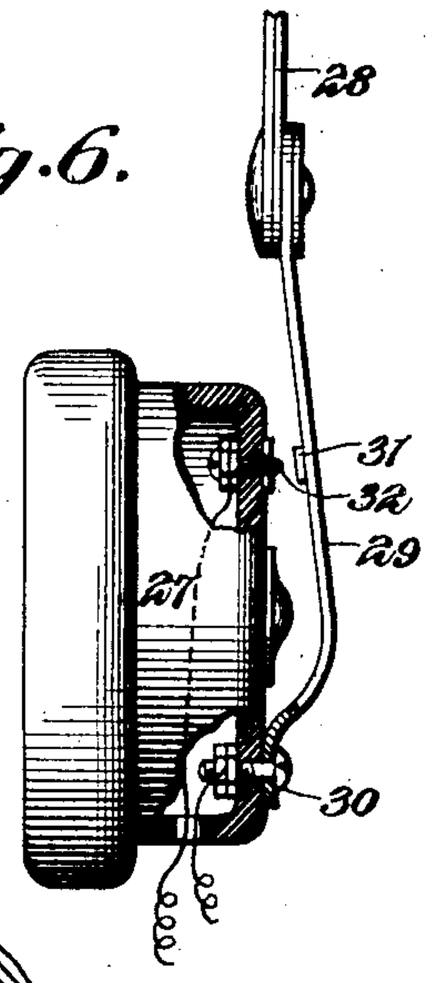


Fig. 6.



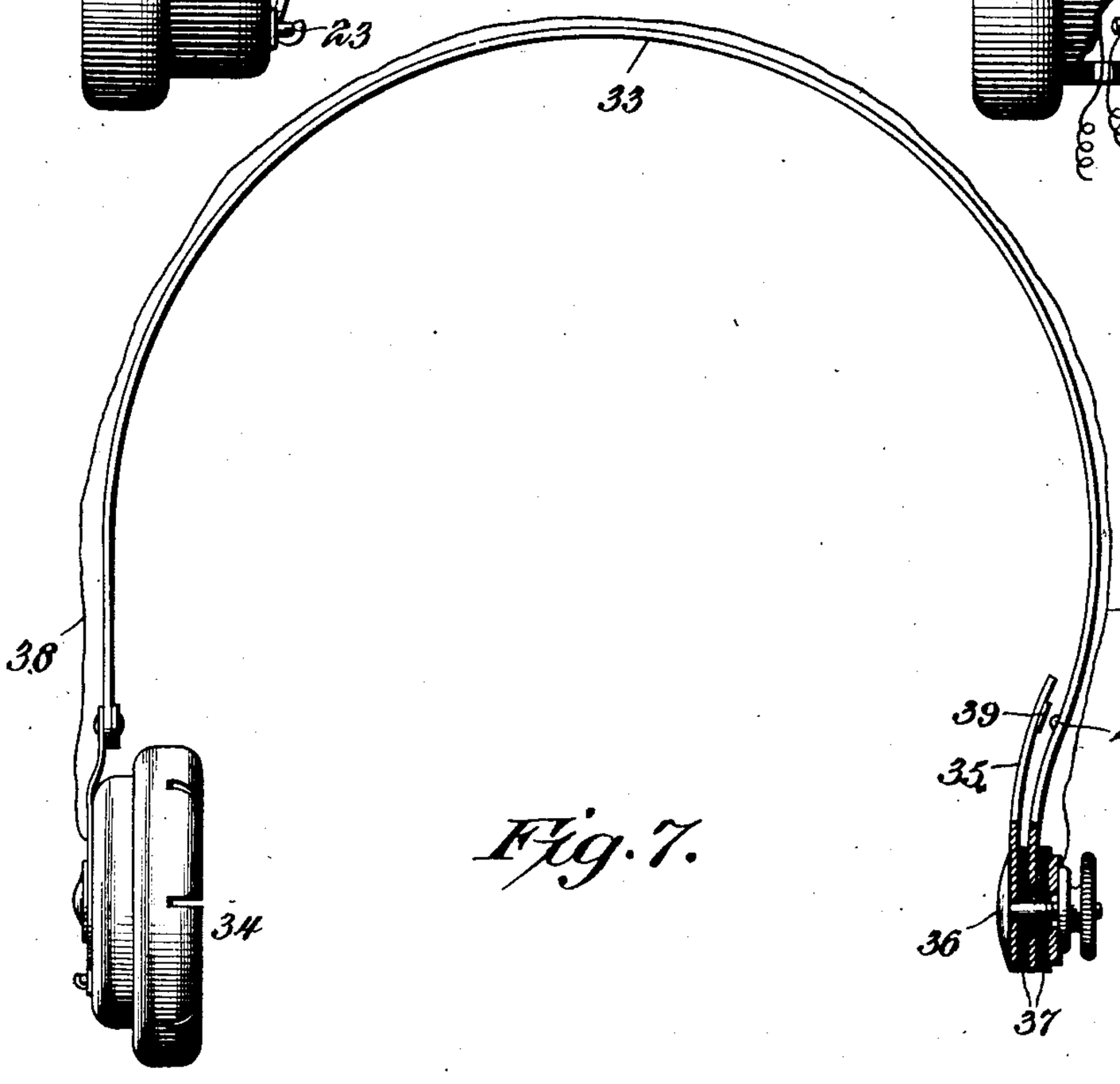


Fig. 7.

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UNITED STATES PATENT OFFICE.

HERMANN GEORGE PAPE, OF NEW YORK, N. Y.

AUTOMATIC CIRCUIT-CLOSER.

No. 864,858. Specification of Letters Patent. Patented Sept. 3, 1907.

Original application filed June 16, 1904, Serial No. 212,819. Divided and this application filed September 23, 1905. Serial No. 279,837.

To all whom it may concern:

Be it known that I, HERMANN GEORGE PAPE, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a new and useful Automatic Circuit-Closer, of which the following is a specification.

This invention relates to a novel telephone receiver constructed with special reference to its use as the earpiece of an audiphone set, which latter is used as an aid to defective hearing, and comprises an earpiece electrically connected to a sound receiver corresponding in function with the transmitter of a telephone apparatus. The present application is a division of one filed by me on June 16, 1904, Serial No. 212,819, which has now eventuated in a patent granted on October 3, 1905, and numbered 800,675.

The primary object of the present invention is to provide in connection with a receiver and head band therefor, an automatic circuit closer coöperating with the head band to close the circuit through the instrument when the band is placed upon the head to position the receiver at the ear.

Several embodiments of the invention are disclosed in the accompanying drawings.

Figure 1 is a perspective view of the form which at present is considered preferable. Fig. 2 is a sectional view through the receiver and the associated portion of the head band. Fig. 3 is a sectional view on the line 3—3 of Fig. 2. Fig. 4 is a rear elevation of the structure shown in Fig. 2. Fig. 5 is a side elevation of a slightly modified form of structure. Fig. 6 is a view partially in section of another embodiment of the invention, and Fig. 7 is a view in elevation of still another form.

Similar reference numerals are employed to designate corresponding parts in all the figures of the drawings.

In the embodiment illustrated in the first four figures, a receiver is shown generally at 8 and comprises a casing within which are located the usual diaphragm 9 and magnet 10. This receiver is mounted upon one end of a supporting device in the form of a head band 11 comprising pivotally connected bowed springs, said band at one end having an extension plate 12 pivotally connected to the springs and terminating at its free end in a hook 13. The plate 12 extends across the rear side of the receiver, and the hook 13 has a detachable and pivotal engagement in a keeper 14 carried by the rear wall of the receiver casing.

Located within the casing is a circuit closer having the usual connections with the magnet and leads, said circuit closer in the present embodiment consisting of a pair of yielding contact springs 15, each of said springs being secured to the rear casing wall, as shown at 16, and having their free ends disposed in overlapping relation. An actuating device consists of a plunger stem 17 slidably mounted in the rear wall of the casing, the inner end of said stem having an enlargement 18 that bears against the adjacent spring contact, the outer end having a head 19 that is borne against by the extension plate 12 of the head band.

Under normal conditions, or when the receiver is not in use, the outer spring 15 bearing against the enlargement of the stem, forces the same outwardly, and the spring contacts are thus out of engagement. If, however, the apparatus is applied to the head of an operator or wearer, the bowed head band is sprung apart, and when the receiver is placed against the ear, the tension of said head band is sufficient to overcome the tension of the spring 15 that bears against the stem, so that said stem is forced inwardly and the springs are brought into contact with each other thereby closing the circuit. It will thus be seen that an exceedingly simple structure is provided, whereby, upon the application of the apparatus to the head of a wearer, the contact will be automatically made.

A slightly different form of structure is illustrated in Fig. 5, wherein the receiver is shown at 20 and the head band at 21, said head band having the usual extension 22 pivotally connected, as shown at 23, to the receiver. Mounted on the rear outer side of the receiver casing is a spring contact 24 having a head 25 borne against by the extension 22. A contact, shown diagrammatically at 26, is disposed in the path of movement of the spring 24. The operation of this device will be obvious, and it will be apparent that the same automatic features are present.

Still another embodiment is disclosed in Fig. 6, wherein the receiver is shown at 27. The head band is designated 28 and has an extension 29 which in this instance is of a yielding nature and is rigidly fastened, as shown at 30, to the rear casing wall, the fastener also constituting a binding post. The resiliency of the extension 29 permits the relative movement of the receiver and band, and said extension is provided with a contact 31 that is moved into and out of engagement with another contact 32 secured to the rear wall of the receiver casing, as shown, and having its outer end disposed in the path of movement of the contact 31.

Still another modification that involves the same basic feature is shown in Fig. 7, wherein a head band 33 is illustrated, having at one end a receiver 34 and provided at its other end with a contact spring 35. This spring is secured to the adjacent end of the head band by a suitable clamping bolt 36 passing through the two and through suitable insulation 37 that separates the spring 35 and the head band. The bolt 36 is insulated from the head band, but is in electrical engagement with the spring 35, and connected to said bolt is a lead 38, the other lead being connected directly to the head band. The head band 33 is of greater resiliency than the spring 35 and consequently

it will be apparent that when the structure is applied, the said head band will be moved toward the free end of the spring 35. Said free end is therefore provided with a contact piece 39, and a corresponding contact 40, carried by the adjacent portion of the head band, is consequently movable into and out of engagement with the contact 39.

From the foregoing it is thought that the construction, operation, and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention. In this connection it may be stated that while the invention is particularly useful in connection with audiphone sets, as above described, it will still be apparent that its application is not limited in this respect, as said invention may be employed for a variety of purposes.

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

1. The combination with a receiver, of a circuit closer, and a head band for the receiver constituting operating means for moving the switch to closed position upon the positioning of the head band and receiver upon an operator.

2. The combination with a receiver, of a circuit closer, and a curved spring head band for the receiver constituting a support for the same, said band also constituting operating means for moving the switch to closed position upon the positioning of the head band and receiver.

3. The combination with a receiver, of a head-engaging support for the receiver movably connected at one end to the same, and a circuit closer having a portion interposed between the receiver and support and operated upon their relative movement.

4. The combination with a receiver, of a head-engaging support for the receiver movably connected with the same, and a circuit closer including an element carried by the receiver, and an element actuated by the head-engaging support upon the relative movement of the receiver and said support.

5. The combination with a receiver, of a head-engaging support for the receiver movably associated with the same, and a circuit closer actuated upon the relative movement of the receiver and said support.

6. The combination with a head engaging device, of a receiver movably mounted thereon and a circuit closer mounted within the receiver, said closer comprising a pair of yielding contacts, and an actuating stem projecting from the receiver and operated by the head engaging device.

7. The combination with a spring head band, of a receiver movably mounted upon one end of the same, a circuit closer located within the receiver, and an actuating stem for the closer slidably mounted in the casing and having a head borne against by the head band.

8. The combination with a receiver including a casing, of a head band, a circuit closer operated by the head band, and a detachable pivotal connection between the head band and casing.

9. The combination with a receiver including a casing having a keeper, of a head band provided with a terminal hook engaging the keeper to effect a hinge connection between the receiver and band, and a circuit closer including an element interposed between the receiver and band and operated on the relative swinging movements thereof.

10. The combination with an instrument of the class described, of a circuit closer arranged within the circuit thereof, and a head-engaging support, said head-engaging support constituting a part of the circuit closer.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

HERMANN GEORGE PAPE.

Witnesses:
IDA B. PAPE.
ANNA A. DREYER.