

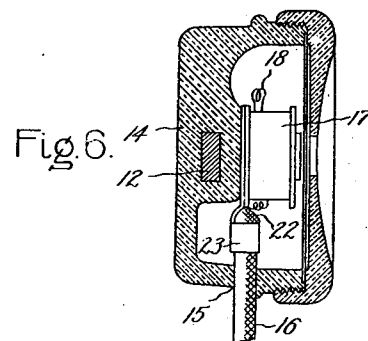
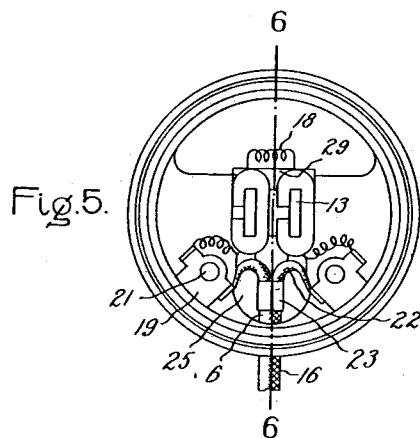
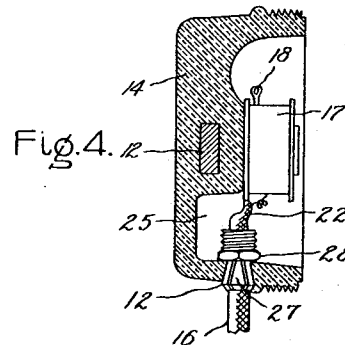
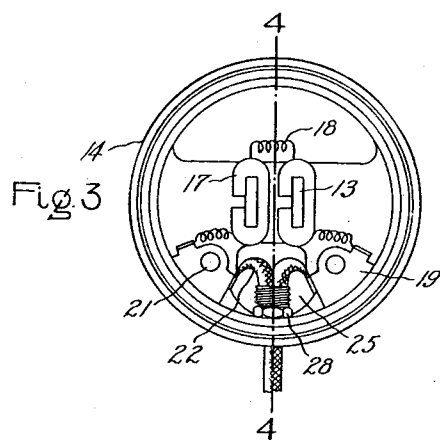
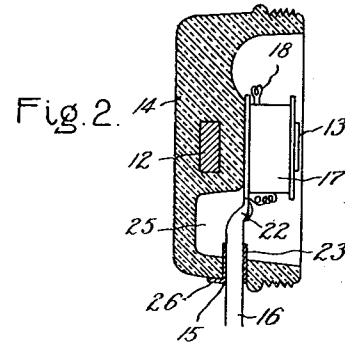
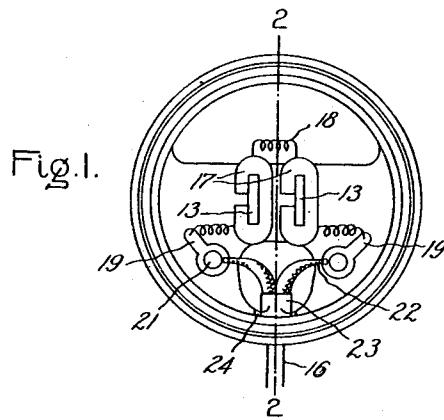
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J. H. BUTCHER ET AL

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TELEPHONE RECEIVER AND LIKE INSTRUMENT

Filed May 11, 1926



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## UNITED STATES PATENT OFFICE.

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## TELEPHONE RECEIVER AND LIKE INSTRUMENT.

Application filed May 11, 1926, Serial No. 108,366, and in Great Britain June 8, 1925.

The invention relates to telephone receivers and the like instruments and has for its object to provide improved means for anchoring the connections between the external leads and the coils and for preventing damage to these connections.

The invention consists in securing the external leads, near their junction to the coil terminals, firmly to the casing, so that any pull on the external flexible conductors is taken up by the anchor and is not transmitted to the connections of the leads with the coil terminals.

The anchor may consist of a strip of metal formed at one end into a split tube with a projection on each side and adapted to be slipped from the inside of the casing through the lead opening in the casing and to be squeezed round the flexible leads, the projections preventing the fitting from being pulled through the opening. The end of the strip may be bent over the outside of the casing, thus securing it to the casing.

In another form of construction the anchor for the leads consists of a plate having an aperture large enough to enable it to be fitted over one or both pole pieces before the coils are placed therein and having integral therewith a split cylindrical portion which can be squeezed over the flexible leads.

A further form of anchor may consist of a tapered spring collet which can be squeezed on to the leads by a nut and at the same time drawn into a tapered hole in the casing for carrying the leads.

The connections between the external lead ends and the coil terminal may be made in any convenient or well known manner. One convenient method is to secure a conducting plate to the casing so that it is insulated from other metal parts and to connect the coil and lead ends to the plate. When the casing consists of composite insulating material, the plate may be secured to it by means of a rivet and the lead and coil ends may be soldered to tags on the plate.

The novel features which we believe to be characteristic of our invention will be set forth with particularity in the appended claims. Our invention itself, however, will

best be understood from reference to the following specification taken in connection with the accompanying drawings wherein like reference numerals designate similar parts. In the drawings Fig. 1 is a plan view of a watch type telephone receiver, with the diaphragm and cover removed embodying the features of our invention; Fig. 2 is a cross sectional view taken on line 2—2 of Fig. 1; Fig. 3 is a view similar to that of Fig. 1 showing a modified form of our invention; Fig. 4 is a cross sectional view taken on line 4—4 of Fig. 3; Fig. 5 is a view similar to that of Fig. 1 showing a further modification of our invention and Fig. 6 is a cross sectional view taken on line 6—6 of Fig. 5.

Referring to the drawings and particularly to Figs. 1 and 2, there is shown a telephone receiver which may be of any suitable type but which here includes a magnet assembly, consisting of a permanent bar magnet 12 having pole pieces 13 magnetically connected to the ends thereof, embedded in a mass of composite insulating material 14 which is molded to form the casing of the instrument. An opening 15 is provided in the casing for the accommodation of the flexible leads 16, and the outside of the casing is threaded, as shown, for the reception of the cover which may be used for clamping the diaphragm. The operating coils 17 are inter-connected by the lead 18 and the ends of the coils are soldered to tags 19 which are secured to the casing by screws or rivets 21. The inner ends 22 of the flexible leads may be soldered to the tags 19 or otherwise electrically connected therewith.

The anchoring device here shown comprises a split tube 23 provided with projections 24. This split tube, when assembling, is placed in the hollowed out portion 25 of the receiver casing, and the ends 22 of the flexible leads are passed through it, or it is sprung round them. It is then squeezed tightly to grip the lead and at the same time a lug 26 on it is pushed through the opening 15 until the projections 24 bear against the inside of the hole, when the end of the lug 26 is bent over outside the casing, as indicated, thus securely anchoring the flexible leads to the casing

apart from the electrical connection of the flexible leads.

In Figs. 3 and 4 the opening 15 is slightly tapered and a tapered spring collet 27 having a screw thread provided externally of its smaller end, together with a nut 28, is used for anchoring the leads 16. In assembling, the ends 22 of the leads are pushed through the spring collet 27, while it is in the open, and the smaller threaded end is then inserted from the outside of the casing through the opening 15. The nut 28 is run up the ends 22 of the leads and placed on the screw threaded portion of the collet 27 and then tightened, thus drawing the collet into the opening 15 where it becomes firmly wedged and at the same time grips the leads.

In this arrangement the tags 19 are shaped to engage the inside of the casing so as to prevent relative movement between the tags and casing.

In Figs. 5 and 6 the anchoring device comprises a plate 29 having an opening to receive pole pieces 13 and a split tube portion 23 formed integrally with it. In assembling, the plate portion 29 is placed over the pole pieces before the operating coils are placed thereon, so as to be held in position by the operating coils, and the split tube portion 23 is then sprung over the leads 16 and squeezed so as to firmly grip the same.

What we claim as new and desire to secure by Letters Patent of the United States is:—

1. In a telephone receiver or like device, a casing having an opening therethrough for the passage of external leads, and means comprising a split metal tube extending through said opening for anchoring the leads to said casing whereby any pull exerted on the leads may not be transmitted to electrical connections within said casing.

2. In a telephone receiver or like device, a casing having an opening therethrough for the passage of external leads, a metal tube surrounding said leads and mounted in said opening, said tube having projecting portions for anchoring said leads to said casing.

In witness whereof, we have hereunto set our hands this 19th day of April, 1926.

JOHN H. BUTCHER.  
GEORGE H. BIRD.