

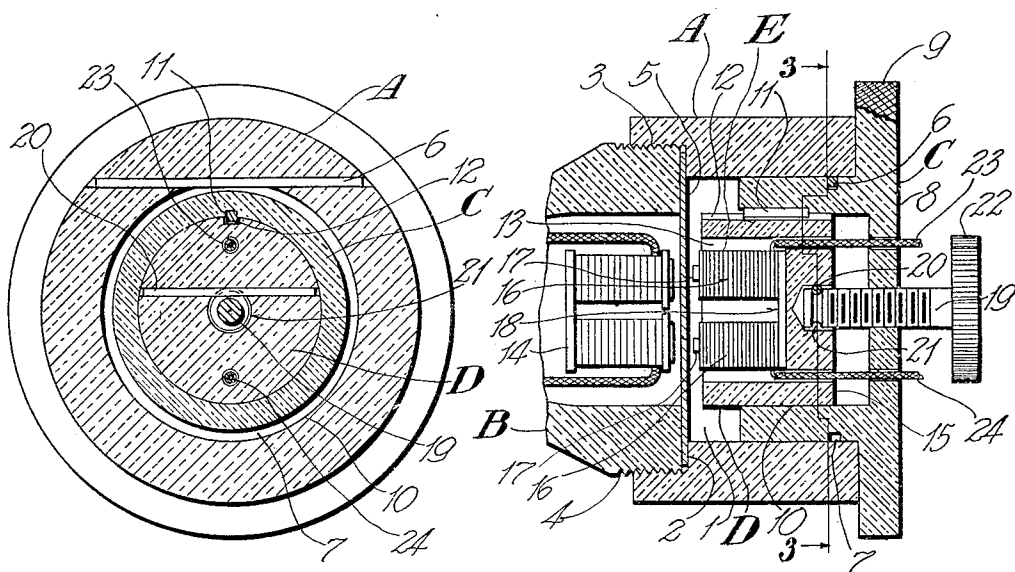
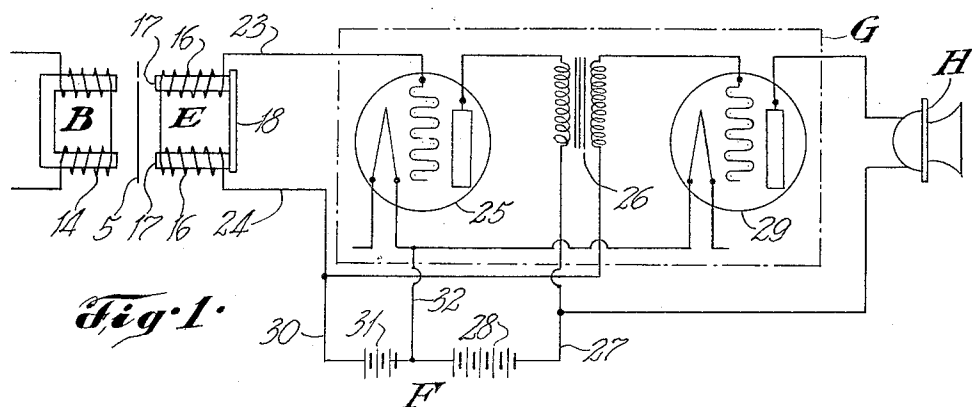
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PICK-UP ATTACHMENT FOR TELEPHONE RECEIVERS

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PICK-UP ATTACHMENT FOR TELEPHONE RECEIVERS

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This invention relates generally to telephony. More particularly, my invention relates to a certain new and useful improvement in pick-up attachments for telephone receivers and has for its object the provision of a simple, inexpensive, conveniently installed device for efficiently amplifying and audibly reproducing the pulsations of the receiver.

With the above object in view, my invention resides in the provision of a device for coupling a telephone-receiver with a remote or separate reproducing device, the coupling-device including means inductively responsive to variations in the field of the electromagnet, of the receiver, in association with a circuit, or so-called hook-up, for transmitting said variations to the reproducing device; in the provision of a device of the character stated associated with a sound reproducing device, the coupling-device including means for amplifying and transmitting to the reproducing device the current changes in an inductance or so-called pick-up coil responsive to variations in the intensity of the field of the electromagnet of the telephone receiver; in the provision of a device of this kind adapted for association with the usual diaphragm of the telephone receiver for varying the intensity of the magnetic field of a pick-up inductance in response to flexural movement of the diaphragm; in the provision of a device of the type stated having means for matching the polarity of a pick-up coil with the field of the electromagnet of the telephone receiver; in the provision of a device of the type stated having means for varying the coupling of a pick-up coil with the electromagnet of the telephone-receiver and with the diaphragm thereof; and in the novel features of form, construction, arrangement, and combination of parts hereinafter described and pointed out in the claims.

In the accompanying drawings,

Figure 1 is a diagrammatic illustration of my invention associated with a thermionic amplifying and transmitting device delivering its output to a sound reproducer, in connection with the electromagnet of the tele-

phone receiver and a source of energy and potential;

Figure 2 is a longitudinal sectional view through the pick-up attachment as detachably mounted on a telephone receiver, portions of the latter being broken away; and

Figure 3 is a sectional view along the line 3-3, Figure 2.

Referring now more in detail and by reference characters to the drawings, which illustrate a preferred embodiment of the invention, my present device, generally described, includes a shell or body A which is adapted for attachment to the standard telephone-receiver B and which carries a rotatable guide-member C having mounted therein for movement towards or away from the receiver B a carrier D supporting a magnet or pick-up coil E, the latter being connected to a source of electrical potential F and preferably associated with a thermionic amplifying and transmitting device G whose output is preferably delivered to a sound reproducing device or so-called loud-speaker H for rendering audible the telephonic alternations in the telephone receiver or the vibrations of the diaphragm thereof, as presently appearing.

The shell A, which is preferably tubular in contour, has a bore 1 longitudinally axially aligned with the receiver and counterbored, as at 2, the wall of the counterbore 2 being threaded, as at 3, for attaching co-operation with the usual threaded end 4 of the telephone receiver B that is exposed after removal of the standard ear-piece (not shown) commonly threaded to the receiver. As is well known to those skilled in the art, the removal of the ear-piece permits the removal or replacement of the metallic diaphragm 5 of the receiver B, and this diaphragm may be thus removed from the receiver B prior to threading the shell A thereon, at the option of the person using the device. If so removed, the pick-up coil E is responsive only to telephonic alternations in the telephone-receiver B, but if the diaphragm 5 is not removed, the flexural vibrations thereof also effect the pick-up coil E.

The guide-member C, which is also pref-

erably tubular in contour and which, as stated, is rotatably mounted in the bore 1 of the shell A, is prevented from longitudinal or axial movement in the bore by a key 6 passed through the shell A for sliding co-operation with a circumferential or annular groove 7 provided suitably in the guide C. That end of the guide-member C that is away from the receiver B is closed by an end wall 8 laterally extended beyond the shell A preferably for sliding contact with the adjacent end thereof and provided with a knurled edge 9 for rotational manual manipulation of the guide C, as presently appearing.

Longitudinally or axially shiftable in a guideway or bore 10 of the guide-member C, is the pick-up coil or magnet supporting carrier D, which is preferably cup-shaped or chambered, and which is held from rotation relatively to the guide-member C by a longitudinal key 11 mounted in the bore 10 for sliding co-operation with a longitudinal keyway or slot 12 in the carrier D. The open end of the chamber 13 of the cup-shaped carrier D faces toward the electromagnet 14 of the telephone-receiver B when the device is mounted thereon, the other or outer end of the carrier D being closed by an end wall 15 facing the end wall 8 of the guide-member C.

Mounted in the chamber 13 on the inner face of the end wall 15 in symmetrical relation with respect to the axis of the electromagnet 14 of the telephone receiver B, is the preferably iron-core pick-up coil or inductance E, which preferably comprises a pair of windings 16 each having an iron core or pole piece 17, the pole pieces being mechanically and magnetically connected by an iron yoke 18 attached to the end wall 15, the inductance E thus preferably forming a so-called horse-shoe magnet facing towards the electromagnet 14 and the diaphragm 5, if used.

Centrally threaded through the end wall 8 of the guide member C, is an adjusting screw 19 having its inner end rotatably retained by a key 20 disposed through the end wall 15 of the carrier D for sliding co-operation with an annular groove 21 in the screw 19, the outer or projecting end of the screw 19 being provided with a preferably knurled head 22 for manual manipulation of the screw 19 to move the carrier D and its supported pick-up coil E towards or away from the diaphragm 5 or the electromagnet 14 of the telephone-receiver B.

The structure thus described is preferably constructed of non-magnetic materials, as vulcanized rubber, bakelite, brass, and the like, as may be suitable to the several parts, except, of course, those parts carrying electric or magnetic circuits, as the pole pieces 17, windings 16, and yoke 18.

The respective terminals 23, 24, of the pick-up inductance E are preferably passed through the end wall 15 of the carrier D and thence preferably through the end wall 8 of the guide-member C for electrical connection with a suitable source of potential F, and also, preferably, through the amplifying and transmitting device G to the sound reproducer H.

One arrangement of such connection is diagrammatically illustrated in the drawings, one terminal, as 23, of the pick-up coil E being connected to the grid of a thermionic device or three-electrode tube 25, the plate thereof being connected to the primary of a so-called audio-transformer 26 and thence by the lead 27 to the source of energy and potential F, such as a common "B" battery 28. The secondary of the transformer 26 is connected at one end to the grid of a second thermionic tube 29, and at the other end through the lead 30 to the source of potential F preferably through the usual "C" battery 31. The plate of the tube 29 is connected through the sound reproducer or so-called loud-speaker to the "B" battery 28 preferably by the lead 27. The usual negative filament returns are indicated by the lead 32 to complete the potential and energy circuits of the amplifier, the other connections of the filament circuits not being indicated on the drawings, being of the usual form well known to those skilled in the art.

It will be readily understood that variations, particularly at audio frequency, in the intensity of the magnetic flux surrounding the pick-up inductance E will vary the grid voltage of the valve or tube 25, with corresponding amplification of such variations through the amplifier and transmitting device G in accordance with the characteristics of the tubes employed, the speaker H reproducing said variations in the form of audible sound.

By rotating the guide-member C in the shell A, the polarity of the pick-up coil E may be adjusted or brought into proper phase relation suitably to the field of the electromagnet 14 of the telephone receiver B to which the device is detachably mounted, and by manipulating the screw 19 the pick-up inductance E may be moved towards or away from the electromagnet 14 and thus adjusted for so-called tight or loose coupling therewith, or for adjustment of the air gap between the pole pieces 17 and the diaphragm 5, if the latter is used.

Thus it will be seen that my invention provides a device or pick-up attachment for coupling a telephone receiver with a reproducing device, the latter being preferably connected through a thermionic amplifying device. The reproducing device may take the form of a so-called loud-speaker, but it also may take the form of a so-called dictaphone

or other sound recording device. My invention is particularly useful in reproducing with so-called loud-speaker volume a telephonic conversation and for other like objects of great practical utility and value.

It will be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the device may be made and substituted for those herein shown and described without departing from the nature and principle of the invention.

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

1. In a pick-up attachment for telephone receivers, a pair of series-connected magnetically responsive windings adapted for inductive coupling with the electromagnet of a telephone-receiver, means for adjusting the coupling of the windings with said electromagnet, means for adjusting the polarity of said windings with respect to said electromagnet, means for supporting said windings on the receiver, and means connecting said windings with a source of potential.

2. In a pick-up attachment for telephone receivers, a pair of series connected electrical windings adapted for disposition in the field of the electromagnet of a telephone-receiver, means for varying the coupling of said windings with said electromagnet, means for adjusting the polarity of said windings with respect to said electromagnet, means detachably supporting said windings on the receiver, and means for connecting said windings with a source of potential.

3. In a pick-up attachment for telephone receivers, an inductance including a pair of electrical windings having its magnetic field adapted for association with the diaphragm of a telephone-receiver, means for varying the air-gap between the windings of said inductance and said diaphragm, means for rotating said windings for adjusting the polarity of said inductance with respect to the electromagnet of the receiver, and means for connecting said inductance with a source of potential.

4. In a pick-up attachment for telephone receivers, a body member adapted for mounting on a telephone receiver, said member having a bore longitudinally axially aligned with the receiver, a tubular guide member mounted for rotation in said bore, means provided on said guide-member for rotational manipulation thereof, a carrier shiftably disposed in said guide-member, means for shifting said carrier in the guide-member, an inductance mounted on the carrier for movement in inductive relationship with the electromagnet of the receiver, and means for connecting said inductance with a source of potential.

5. In a pick-up attachment for telephone receivers, a pair of series-connected magnet-

ically responsive windings adapted for inductive coupling with the electro-magnet of a telephone receiver, means for rotarily shifting said windings relatively to the magnet for varying the phase relationship of said windings with respect to the magnet, means for movably supporting said windings on the receiver, and means for connecting said windings with a source of potential.

6. In a pick-up attachment for telephone receivers, in combination with a sound reproducing device, an inductance movably disposed in the field of the electro-magnet of a telephone receiver, means for rotatably shifting said inductance relatively to the magnet for adjusting the polarity of the inductance suitably to the field of the magnet, and means for electrically connecting said inductance with said sound reproducing device.

7. In a pick-up attachment for telephone receiver, in combination with a sound reproducing device, an inductance, means for movably supporting the inductance in the field of the electro-magnet of a telephone receiver, means for rotatably shifting said inductance relatively to the magnet for adjusting the polarity thereof suitably to the field of the magnet, means for amplifying the potential changes in said inductance, and means for transmitting said potential changes to said sound reproducing device.

In witness whereof, I have signed my name to this specification.

WILLIAM OCHSE.