H. D. BETZ.

COHERER PROTECTOR.

APPLICATION FILED JAN. 28, 1914.

1,242,512. Patented Oct. 9, 1917.

Fig. I.

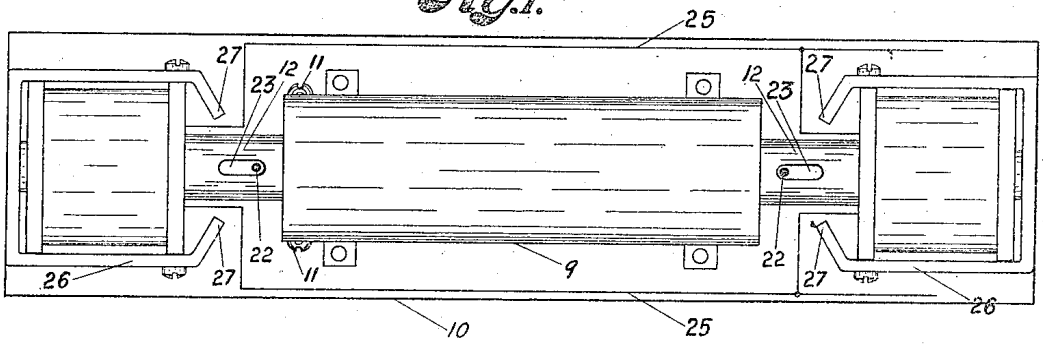


Fig. II.

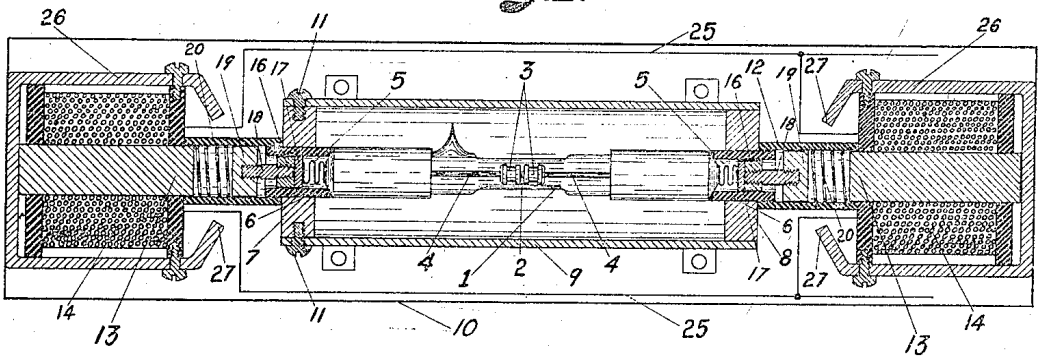
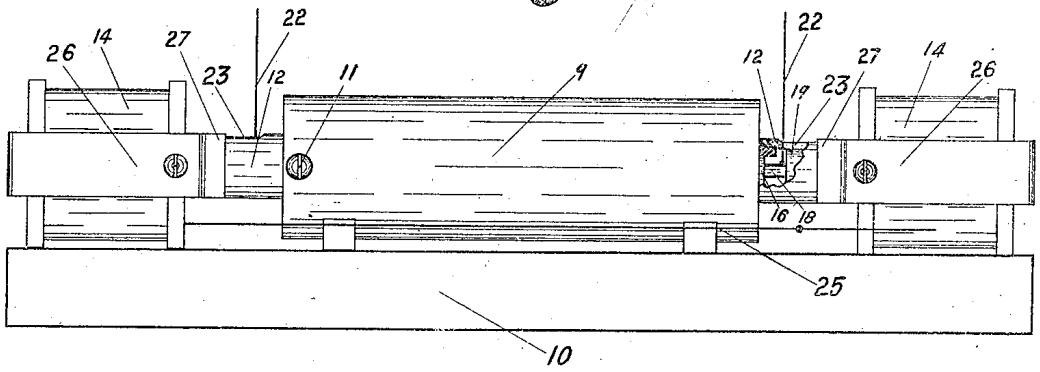


Fig. III.



WITNESSES:

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COHERER-PROTECTOR.

1,242,512. Specification of Letters Patent. Patented Oct. 9, 1917.

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To all whom it may concern:

Be it known that I, HARRY D. BETZ, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Coherer-Protectors; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to coherers, and more particularly to coherers for use as a part of a wireless apparatus, or the like; the principal object of the present invention being to provide means for protecting the coherer, or the like from stray or undesired Hertzian waves, or the like, and particularly from the waves originating in a local transmitter, or any nearly electrical disturbance.

More particularly the invention comprises a metallic case for inclosing the coherer to exclude undesired waves therefrom, contact members normally located within the case and adapted for contacting the coherer terminals, and means for withdrawing the contact members from the metallic case a sufficient distance to insure against the coherer being affected by Hertzian waves or the like, during a protective period.

In accomplishing this object I provide means for mechanically spacing or withdrawing the contact members of the coherer, together with means for automatically reuniting the contacts when the period for protection to the coherer has expired, so that when the contact members are in contact with the coherer terminal, Hertzian waves may affect the coherer, and in carrying out the invention I have provided forms of structure which are illustrated in the accompanying drawings, wherein:—

Figure I is a plan view of a coherer and its protective means, together with means for breaking and making the contacts to the coherer.

Fig. II is a horizontal sectional view of the same.

Fig. III is a side elevation of the same; a part of one of the side necks being broken away for better illustration.

Referring to the drawings:—

1 designates a coherer of the filings type, and which contains the usual filings 2, plugs 3 and terminal wires 4 which extend through and are sealed in opposite ends of the tube and are connected with the contact springs 5.

In one form of my invention, the ends of the coherer are supported by tubes 6 of fiber, or other insulation material, which, in turn, are mounted in the heads 7—8 of a metallic case 9, which may be supported on a suitable foundation 10; the head 8 being preferably permanently, metallically sealed in the case, and the head 7 removably secured therein by screws 11, or the like.

The fiber tubes 6 project beyond the ends of the heads and into fiber or like nonconductive sleeves 12; the outer ends of which inclose the projecting ends of the cores 13 of electro-magnets 14.

Slidably mounted in each of the fiber tubes 6 is a contact member 16; the inner face 17 of which is of good contact material and adapted for engagement with the spring 5, having conductive relation with the terminal wires 4, and the outer portion of each of the members being provided with a shank 18, which extends into the fiber sleeve 12 and is connected with an armature 19 that is slidably mounted within the sleeve.

A spring 20 or the like, is interposed between the end of the core 13 and the armature 19 to yieldingly tension the movable contact members 17 to maintain contact with the spring terminals 5, or the like, of a coherer, and provide the movable contact faces 17 with a metallic connection with wires 22 which extend out through slots 23 in the fiber sleeves and to a source of radiant supply, or the like, (not shown), such as the antenna and ground, or the equivalence, of a wireless apparatus.

As the contact members at each end of the coherer are provided with metallic connections to wires 22; the wires 22 having connection with a supply source, it is apparent that current may be carried through the wires and contact members to the interior of the coherer when the contact members contact the coherer, so that the filings therein are cohered and close a circuit through the coherer when Hertzian waves, or the like, are present, and that, owing to the presence of the springs 20, or the like, the contact members are normally in the position for closing the circuit.

In order to obviate the possibility of accidental closing of the circuit through the

coherer by waves sent out from a nearby transmitter when the coherer and its protective means is used in a wireless apparatus, I provide the magnets, or the like, for positively withdrawing the contact members from operative position with the coherer terminals when the local transmitter, or the like, is in operation; the means for energizing the magnets, or the like, being of any suitable means (not shown), and, if desired, automatically operable by some mechanism, so that current is sent to the magnets, or the like, in order to withdraw the contact members before the transmitter becomes active; such mechanism, however, being merely indicated by the circuit wires 25, which are shown connected in multiple with the paired magnets, so that a circuit may be closed therethrough to magnetize the cores 13, so that the armatures 19 are drawn outwardly in the fiber sleeves and the contact members 16 and their faces 17 pulled away from the spring contact terminals on the coherer a sufficient distance to prevent the closing of a circuit through the coherer by outside waves; the travel of the armatures and slidable contact members being sufficient to draw the said members entirely out of the metallic case, so that the energetic waves produced by the transmitter, or from other local source, when contacting the metal case, will be excluded from the coherer, which is inclosed within the case.

The magnets which I have illustrated and prefer to use comprise metallic saddles 26, which inclose the magnets longitudinally, and have points 27 terminating at the inner ends of the cores, in order to aid the magnetic field from the opposite pole, so that the magnetic field may be easily carried from the outer to the inner poles of the magnets, in order to increase the efficiency of the magnets.

While I have specifically described a particular mechanism for actuating the contact members, I do not wish to be understood as limiting myself thereto, as equivalent mechanism may be substituted therefor.

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

1. The combination with a coherer having end terminals, of a metallic case inclosing the coherer, contact members adapted for coöperation with the coherer terminals, and means for simultaneously withdrawing the contact members from said case.

2. The combination with a coherer having end terminals, of a case inclosing the coherer, non-conductive conduits extending through the case, movable contact members located in said conduits and adapted for coöperation with the coherer terminals, and means for actuating the contact members.

3. The combination with a coherer having end terminals, of a case inclosing the coherer, conduits located in the case, contact members slidable in the conduits and adapted for coöperation with the coherer terminals, means for yieldingly tensioning the contact members toward the coherer terminals, and means for withdrawing the contact members from the coherer terminals against the yielding means.

4. The combination with a coherer having terminals, of a case inclosing the coherer, non-conductive conduits projecting through the case, contact members in said conduits, yielding means for forcing the contact members toward the coherer terminals, and means for withdrawing the contacts from engagement with the said terminals against said yielding means.

5. The combination with a metallic case having closed ends, of non-conductive conduits extending through the closed ends into the interior of the case, a coherer supported by said conduits, out of contact with the case, and having terminals projecting into the conduits, contact members slidably mounted in the conduits, and means for actuating the contact members.

6. The combination with a metallic case having closed ends, of non-conductive conduits extending through the closed ends into the interior of the case, a coherer supported by said conduits, out of contact with the case and having terminals projecting into the conduits, contact members slidably mounted in the conduits, means for yieldingly tensioning the contact members to contact the coherer terminals, and means for actuating the contact members against the tension of the yielding means.

7. The combination of a metallic case and magnets spaced from the ends of the case, conduits located in and projecting from the ends of the case, a coherer supported by said conduits, within the case, sleeves leading from the conduits to said magnets, contact members slidably mounted in the conduits, armatures slidably mounted in the sleeves and connected with the contact members, and means for yieldingly engaging the armatures to tension the contact members toward the coherer terminals.

8. The combination of a metallic case and magnets spaced from the ends of the case, conduits located in and projecting from the ends of the case, a coherer supported by said conduits, within the case, slotted sleeves leading from the conduits to said magnets, contact members slidably mounted in the conduits, armatures slidably mounted in the sleeves and connected with the contact members, springs in the sleeves yieldingly engaging the armatures to tension the contact members toward the coherer terminals, and wires connected with said contact members and extending through the sleeve slots.

9. The combination with a coherer having end terminals, of a metallic case inclosing the coherer, radiant supply terminals yieldingly tensioned toward said coherer terminals, and means for withdrawing said radiant supply terminals from said coherer terminals.

10. The combination with a coherer having end terminals, of a metallic case inclosing the coherer and coherer terminals, radiant supply terminals slidably mounted in and insulated from said casing, means for yieldingly tensioning said terminals toward the coherer terminals, and means for withdrawing said radiant supply terminals from the coherer terminals against the yielding tension.

11. The combination with a conductive case having axial, non-conductive bushings, of a coherer supported by said bushings within said case, coherer terminals exposed within said bushings, radiant supply terminals slidably mounted in said bushings, and means for making and breaking contact between said coherer and radiant supply terminals.

12. The combination with a metallic case having non-conductive, axial bushings, of a coherer supported in said bushings within the case, and having terminals exposed through said bushings, an antenna to ground circuit, having its terminals slidably mounted in said bushings, springs for yieldingly tensioning said terminals toward said coherer terminals, and magnets for drawing said antenna to ground circuit terminals against the tension of said springs to break connection with the coherer terminals.

13. In a device for receiving Hertzian waves, a metallic case, non-conductive axial bushings in said case, a coherer tube supported by said axial bushings, coherer arms in said coherer tube projecting into said bushings, metallic particles in said coherer tube between said coherer arms, an antenna to ground circuit, terminals for said circuit slidably mounted in said bushings, a magnet located adjacent each end of the metallic case, an armature for each of said antenna to ground circuit terminals, springs adapted to bear against said magnets and armatures for normally holding said terminals against said coherer arms, and means for energizing said magnets to break connection between said terminals and coherer arms.

14. Apparatus for the purpose described comprising a detector, a metal tube surrounding and projecting beyond the ends of the same and metal plugs arranged to slide in the projecting ends of said tube and to close and open circuit through said detector within said tube.

15. The combination with a coherer or other detector having end or other terminals, of a case, composed of any suitable conducting material or materials, entirely inclosing the coherer except for two or more small round holes therein, contact members movable in said holes and normally engaging the coherer or its terminals within such case, and means for actuating the contact members.

16. The combination with a coherer having end or other terminals, of a case composed of any suitable conducting material or materials entirely inclosing the coherer except for two or more small holes therein, and contact members movable in said holes and normally in close proximity to the coherer, and means for actuating the contact members.

17. A receiving device having usual detector and circuit connections leading thereto, and a metallic protecting casing inclosing said detector, the said connections being separable from the detector within the casing, whereby the energy of undesired transmitting waves will not affect the detector.

18. A receiving device having usual detector and circuit connections leading thereto, a metallic protecting casing inclosing said detector, and means whereby said connections can be readily separated from said detector, said separations taking place within the casing whereby the energy of undesired transmitting waves will not affect the detector.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY D. BETZ.

Witnesses:
RETTA F. THOMAS,
LETA E. COATS.