N° 9791 A.D. 1899

Date of Application, 9th May, 1899—Accepted, 7th Oct., 1899

COMPLETE SPECIFICATION.

Improvements in Apparatus for receiving "Hertz" Electric Undulations or Waves.

I, EUGÈNE DUCRETET, of 75, Rue Claude-Bernard, Paris, France, Inventor, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to improvements in radioconductors (tubes charged with filings, dust or powder) such as are used in wireless telegraphy for receiving electric waves or undulations projected into space the improvements being designed to ensure a more perfect reception and utilization of the electric waves.

The improved radioconductor is represented on the accompanying drawings, in Figs. 1, and 2, in sectional elevation;—and comprises a tube, T, of glass, ivory, steatite, or other suitable insulating material, fitted with internal rods P^{I}, P^{III}, or P^{I}, P^{II}, P^{III}, adapted to fill the interior of the cylinder or tube as completely as possible, excepting as regards the space or spaces occupied by the filings or powder, L, L^{1}, so as to reduce the space within the tube to a minimum and avoid displacement and renewal of the contained air, and with heads or ends, E^{I}, E^{II}, serving to permit of the adjustment of said rods P^{I}, P^{II}, P^{III}, and for making contact with the apparatus which constitutes the complete wireless telegraph receiver, and packed at *g*, g^{1}, to ensure the closing of the tube ends. But two rods may be used (*vide* Figs. 1,) in which case either one, (P^{I},) of the rods, P^{I}, P^{III}, may be adjustable as represented, or both of the rods may be similarly adjustable,—or three rods may be used (*vide* Fig. 2,) in which case, a central rod, P^{II}, is secured within the tube with an outside electrical connection by means of a screw, E^{III}, and both of the outer rods, P^{I}, P^{III}, will be adjustable.

The rods, P^{I}, P^{II}, P^{III}, may be of any metal and their ends or faces (between which the metallic grains filings, or powder, L, L^{1}, are placed,) may be plated or coated with nonoxidisable metals, or, the rods may have an additional appendage of amalgamated metal, or may be formed with a cavity adapted to receive a little mercury, with the object of creating within the tube T an atmosphere of vapours of mercury.

The arrangement represented in Fig. 2, allows of different combinations with external circuits; but it is necessary that contact be made with the exterior of T, at E^{III}.

The metallic filings or dust indicated at L, L^{1}, may be of any metal or alloy; but I prefer to use grains of hard steel obtained by crushing or grinding; steel alloyed with metals such as silver, rhodium, platinum, or chromium, with the object of obtaining a suitable degree of oxidability. This state of hardness obtained by tempering, whether by water or any liquid or by air or compression, is suitable for obtaining grains of convenient size.

Following the knowledge of the arrangements already known and used in electric telegraphy and long distance telephony and my own works on sensitive electric relays, and for the purpose of ensuring a high efficiency of action of my radioconductors whilst diminishing the effects of atmospheric disturbances and earth

[*Price* 8*d*.]

currents, I shall always be able to use in the external circuits connected to the electrodes of the radioconductor, (Figs. 1, and 2,) condensers (whose capacity may be variable and capable of regulation) together with small induction coils (whether with free poles or with a single pole) and to avail myself of their self-induction as well as the transformation that can be obtained by the same.

In order to obtain the best conditions of reception of the hertz electric waves, it is thus, in certain cases, necessary to diminish and suppress the perturbating effects produced by earth and atmospheric currents.

Suitable arrangements which enable me to obtain a good reception with the hereinbefore described improved radioconductors are represented, by way of example, in Figures, 3, 4, 5, and 6, of the drawings.

When the radioconductor, Br, (Fig. 3,) is single, as that represented in Fig. 1, it can be interposed in an electric circuit comprising a battery, P, and a sensitive relay, R, as well as a condenser, Co, of variable capacity in connection with the earth, T. The same arrangement can be employed when there is used a multiple radioconductor, Br^1, (Fig. 4,) like that represented in Fig. 2. The battery, P, may be arranged on the right or on the left of the relay, R.

The reception of the electric waves may further be improved by joining in the circuit of the radioconductor or the relay, R, the battery, P, and the condenser of variable capacity, Co^1, a single pole induction coil, I, (Figs. 5, and 6,) and a second condenser, Co, connected to the earth, T.

In Figs. 3, 4, 5, and 6, C indicates a wire insulated in space and serving to considerably increase the sensitiveness of the tube charged with filings by performing the function of a real "collector of waves."

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In radioconductors, in combination, a tube containing grains, filings, powder or dust suitable for the use of the instrument, internal rods nearly filling the tube and leaving but a small interspace in which the grains filings powder or dust are or is located, and end caps or heads serving to adjust the rods and to establish an electrical connection thereof with an electric circuit and fitted with packing serving to close the tube ends, as set forth.

2. The arrangement hereinbefore described with reference to Fig. 1.

3. The arrangement hereinbefore described with reference to Fig. 2.

4. In radioconductors, the application and use of grains of hard steel alone or alloyed with metal capable of having the desired degree of oxidability and obtained by crushing or by grinding, as set forth.

Dated this 9th day of May 1899.

DAY, DAVIES & HUNT,
Chartered Patent Agents, 321, High Holborn, London, W.C.,
Agents for the Applicant.

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DUCRETET'S Complete Specification.

(2 SHEETS)

SHEET 1

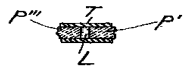


Fig. 1.

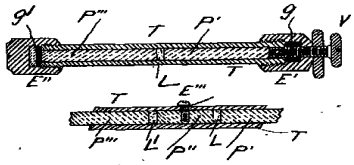


Fig. 2.

SHEET 2

Fig. 3.

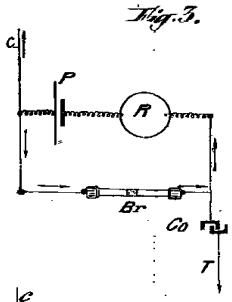


Fig. 4.

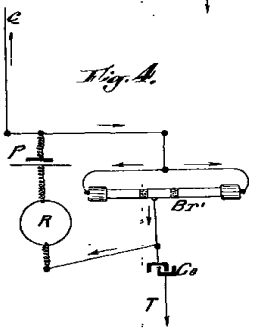


Fig. 5.

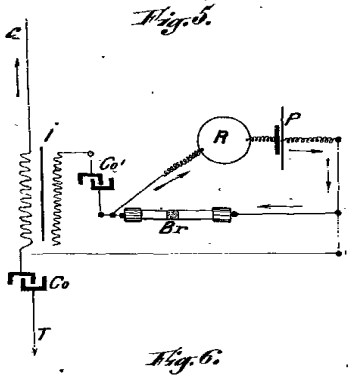
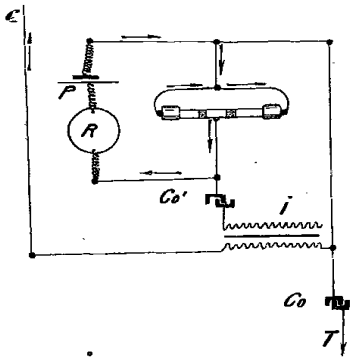


Fig. 6.



[This Drawing is a reproduction of the Original on a reduced scale]

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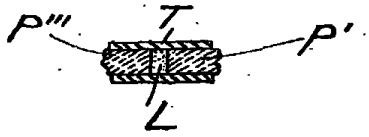


Fig. 1.

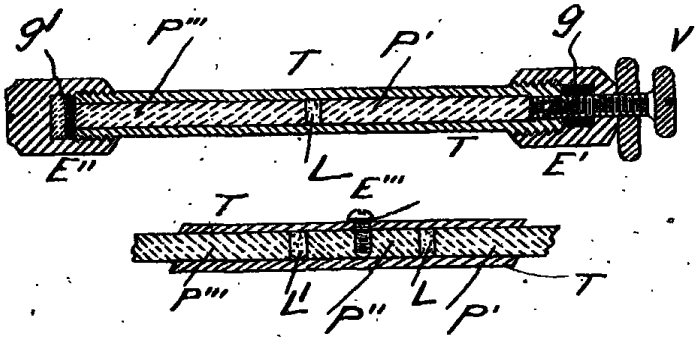
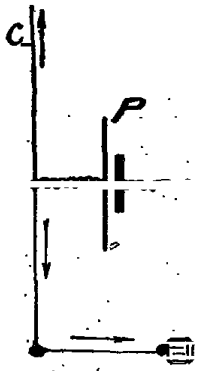


Fig. 2.



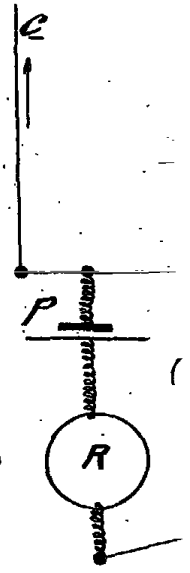


Fig. 3.

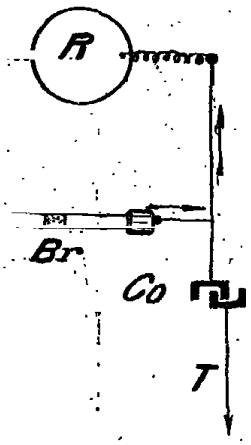


Fig. 5.

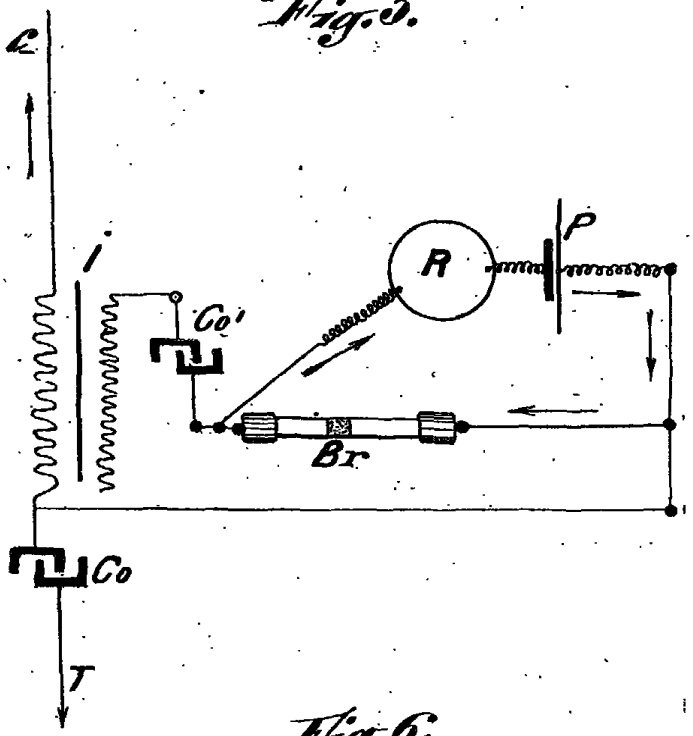


Fig. 4.

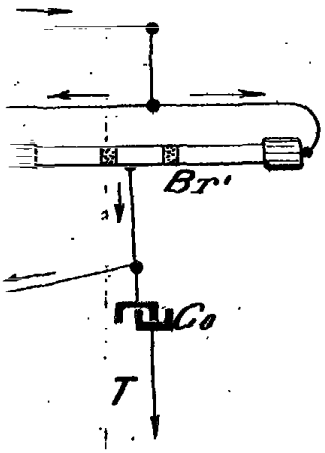
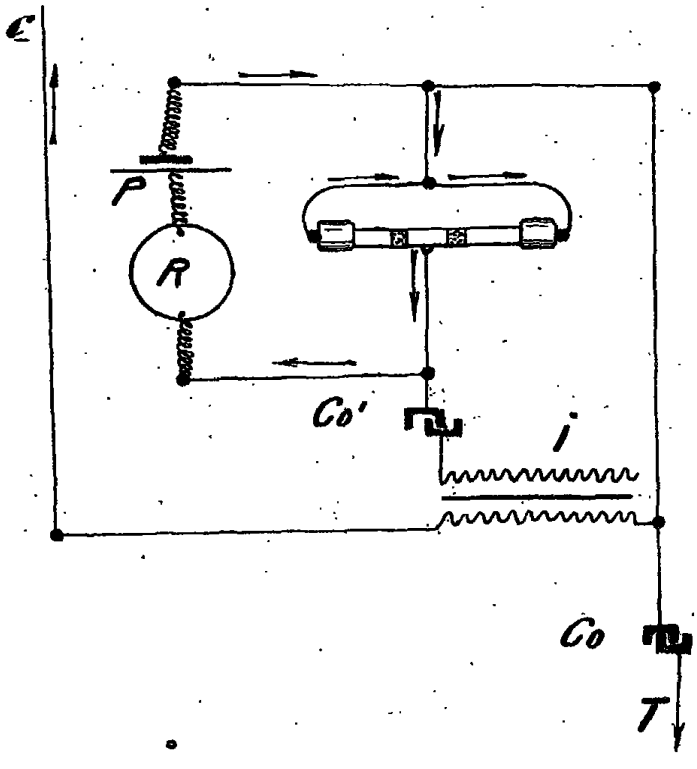


Fig. 6.



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