G. W. PICKARD.

OSCILLATION RECEIVER.

APPLICATION FILED OCT. 15, 1908

912,726. Patented Feb. 16, 1909.

Fig. 1.

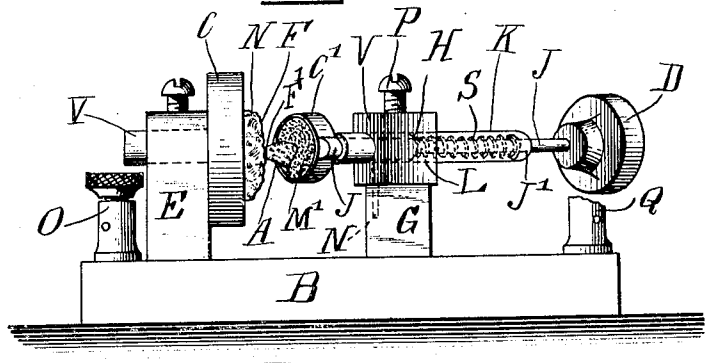


Fig. 2.

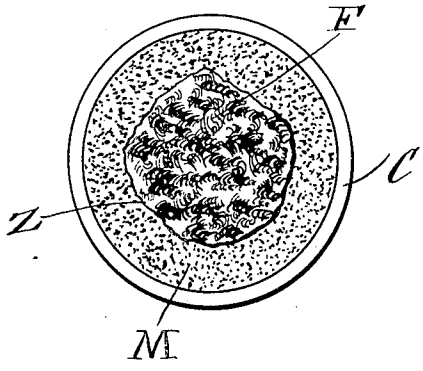
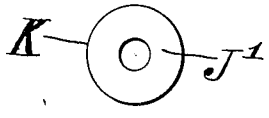


Fig. 3.



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OSCILLATION-RECEIVER.

No. 912,726. Specification of Letters Patent. Patented Feb. 16, 1909.

Application filed October 15, 1908. Serial No. 457,793.

To all whom it may concern:

Be it known that I, GREENLEAF WHITTIER PICKARD, a citizen of the United States of America, and a resident of the town of Amesbury, State of Massachusetts, have invented certain new and useful Improvements in Oscillation-Receivers, the principles of which are set forth in the following specification and accompanying drawing, which disclose the form of the invention which I now consider to be the best of the various forms in which the principles of the invention may be embodied.

This invention relates to oscillation receivers, for use in receiving intelligence communicated by electromagnetic waves, and other similar uses.

The invention involves the extraordinary high degree of useful action in oscillation receivers of a particular electrical conductor when contact is made at a certain characteristic surface thereof, which I have discovered in the course of my investigations in this subject, which conductor, when embodied in an oscillation receiver in accordance with the instructions hereinafter specified, is effective to an extraordinary extent.

Of the drawings, Figure 1 is an elevation of a complete device embodying the invention; Fig. 2 is an end view of the part C of Fig. 1, showing the operative surface of conductor Z; and Fig. 3 is an end view of sleeve K, Fig. 1.

As is shown in Fig. 2, the surface F is the substantially rough, unpolished fracture face of the conductor Z. A suitable fragment of the conductor, which is the mineral red oxid of zinc, is first obtained, as by breaking a chunk of the conductor so as to produce a fracture face. In case the zincite is foliated the breakage should be transverse to the cleavage. I have found that the substance Z differs from other conductors in that a polished surface does not offer as sensitive a contact surface as a rough face such as a fracture surface; and I have found by extended investigation that the results of providing a rough contact surface and particularly a surface formed by fracture, are far superior to those with any other kind of a surface. This seems to be largely due to the fact that a fracture surface, particularly when the fracture is made at a comparatively recent time, presents a clean pure contact face substantially free from superficial or film oxidation caused by atmospheric action. The roughness of the surface is quite considerable for best results, as this affords also the best presentation of minute contacts.

The desired roughness of the contact surface may be produced by other methods than that herein disclosed, but the breaking off of a fragment is apparently the simplest manner of producing a contact surface which is superior to all others, to constitute, when such rough surface is in contact with a suitable second conductor, particularly the chalcopyrite A shown, an oscillation receiver which has approximately double the efficiency of any heretofore known to me.

The conductor Z acts efficiently with practically any other conductor at A, (Fig. 1), which may be brass for example, but chalcopyrite gives the best results, and in that case, the rough fracture face F of the member Z is arranged in contact with a face F^1 of the chalcopyrite member.

As shown in Fig. 2, the member Z (and A also as in Fig. 1) may in a practical form be placed in a liquefied mass of fusible metal M contained in a metal cup C, the rough fracture face F being exposed from the fusible metal M, which is allowed to harden so that the conductor Z becomes embedded in good and extended electrical contact therein.

In Fig. 1 an insulating base B has metallic standards E, G secured to it; the base B being provided with binding posts O, Q for the leads from A and Z to any suitable circuit connections depending on the mode of use of the device, which may be connected in any of the circuits known to those skilled in the electrical arts, such as any wireless telegraphy or telephony or other circuits for oscillating or alternating currents.

The cup C for the member Z is supported by a rod V removably secured in support E. The cup C^1 for member A is formed eccentric on the end of rod J, member A being also mounted (in fusible metal M^1) at a place in cup C^1 which is diametrically opposite rod J. The other end of rod J is provided with hard rubber finger-piece D. Spring S surrounds the reduced part of rod J, its ends being held between the shoulder H of rod J, and the bent-in flange J^1 of sleeve K, (Fig. 3). The inner diameter of sleeve K is sufficiently large to slide over the enlarged part of rod J, and in this position, and before part D is affixed, the sleeve is inserted through perforation L in post V, said post

being swiveled by pin N to standard G. Sleeve K is pushed as far to the left as is the desired pressure against member Z, and then is fixed in place by screw P. Rod J is rotatably free in sleeve K. Evidently, owing to that freedom of rod J, and to swivel N and eccentric cup C^1, the member A, by manipulation of finger-piece D, can be made to contact with any point on rough surface F of member Z. The rough character of surface F of member Z is such as to substantially always provide a contact of the maximum sensitiveness inherent in this particular conductor Z. When used in series with the usual telephone receiver, as is now customary with oscillation detectors in wireless telegraphy and telephony, the invention constitutes the most efficient means known to me, of operating the telephone independently of local energy, by converting a large proportion of the energy of the oscillations into a direct current suitable for operating the telephone.

The mechanical combinations of various modes of use of the invention may be unlimited.

I claim:

1. An oscillation receiver, which comprises a fragment of chalcopyrite in electrical contact with a substantially rough, unpolished fracture surface of the electrically conducting solid, the mineral red oxid of zinc substantially as described.

2. An oscillation receiver, which comprises the substances zincite and chalcopyrite in electrical contact with each other substantially as described.

GREENLEAF WHITTIER PICKARD.

Witnesses:
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