G. W. PICKARD.

OSCILLATION RECEIVER.

APPLICATION FILED MAR. 16, 1910.

963,173.

Patented July 5, 1910.

Fig. 1.

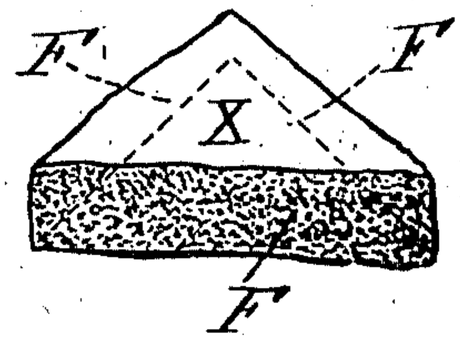


Fig. 2.

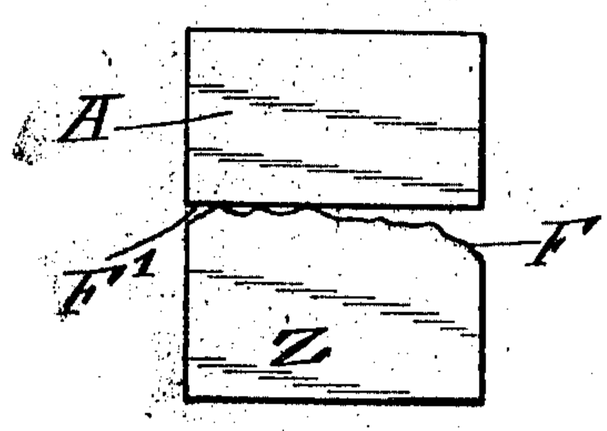


Fig. 3.

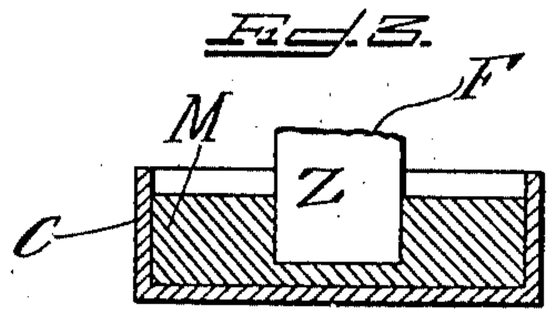


Fig. 4.

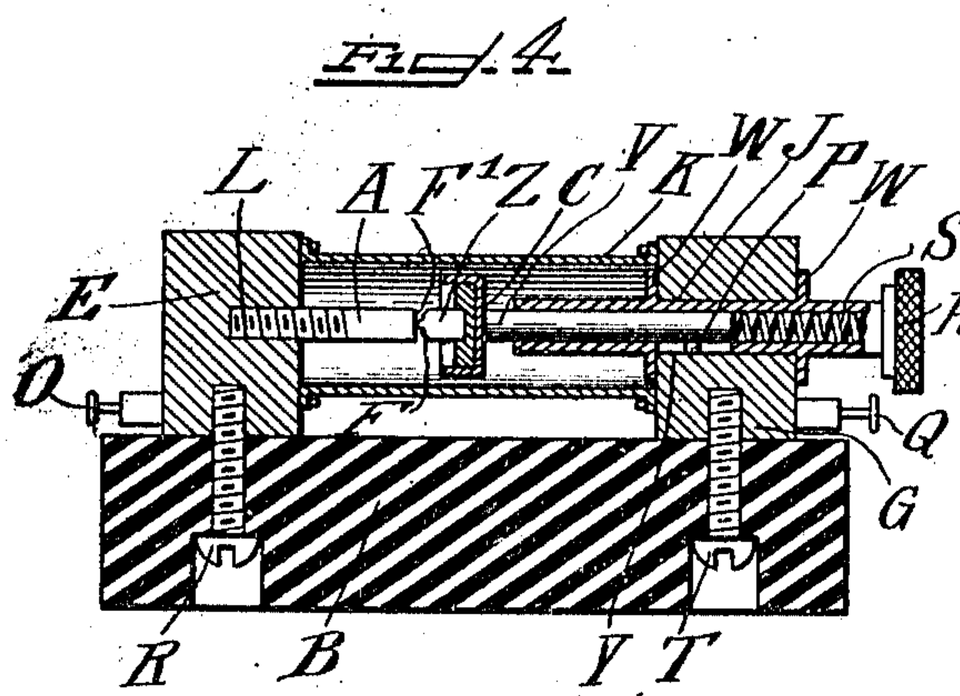
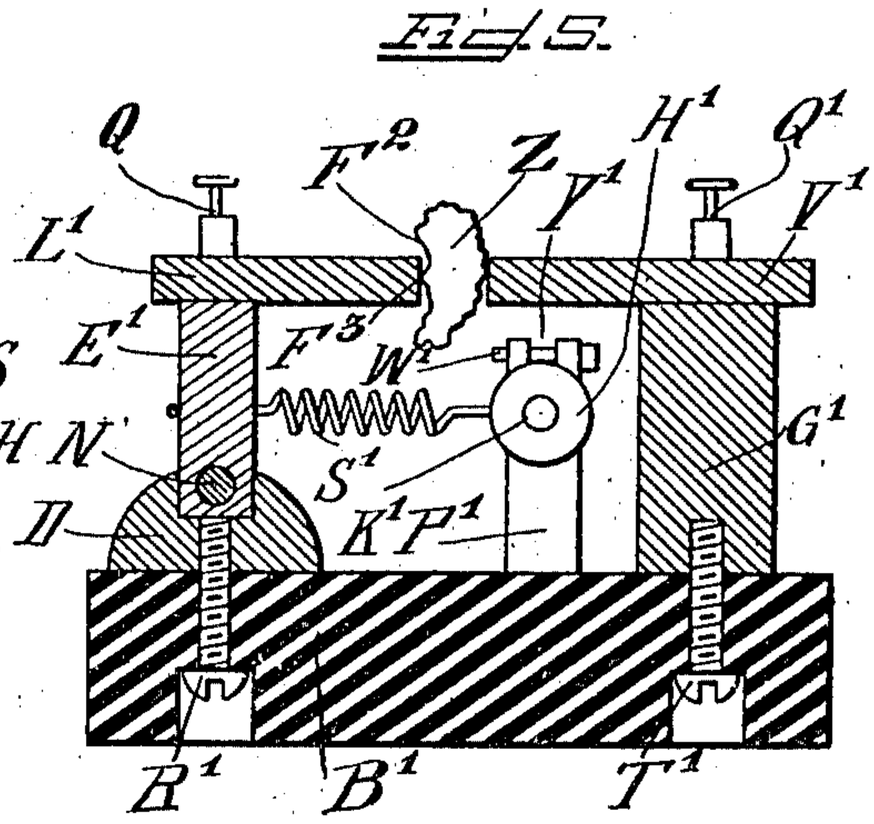


Fig. 5.



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OSCILLATION-RECEIVER.

963,173. Specification of Letters Patent. Patented July 5, 1910.

Original application filed September 14, 1907, Serial No. 392,894. Divided and this application filed March 16, 1910. Serial No. 549,687.

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 drawings, 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 application is a division of my application, S. N. 392,894, filed September 14th, 1907.

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

The invention involves the extraordinary high degree of useful action in oscillation receivers, of a particular electrical conductor 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 disclosure hereof, is effective to approximately double the degree of any previous oscillation receiver of which I am aware.

Of the drawings, Figure 1 is a perspective view of a cleavage fragment of the massive form of the conductor of the invention; Fig. 2 is an elevation of an operative pair of conductors, one of which, Z, is the conductor of Fig. 1; Fig. 3 is a section of means for operatively mounting the conductor Z of Fig. 2; Fig. 4 is a sectional elevation of a practical mechanical holder for the conductors of Fig. 2, conductor Z being mounted as in Fig. 3; and Fig. 5 is a sectional elevation of another form of holder for said conductors.

As shown in Fig. 1, a cleavage fragment of the particular conductor, which is the mineral red oxid of zinc, (zincite), is first obtained, as by breakage of a chunk of the massive conductor, producing a separation along a cleavage face, (the cleavage in the mineral being spathic or foliated), and producing at least one fracture face transverse to the cleavage face. This substance is now known in this art as perikon, and this invention is therein widely known as the "Perikon detector." In Fig. 1 the local cleavage face is indicated at X and the fracture faces at F, F, F.

As is shown in Figs. 2, 3 and 4, the fracture faces F are rough and not polished, being left in exactly the above-described condition resulting from breakage, as shown in Fig. 1; because I have found that the substance Z differs from many other conductors in that a polished surface does not offer as sensitive a contact surface as a rough fracture face. The substance Z, on account of its inherent properties, however, constitutes a sensitive member of an oscillation receiver, irrespective of any rough character of its contact surface, provided that suitable small-aread contact be obtained, as by any suitable means.

The conductor Z acts efficiently with practically any other conductor such as A, (Fig. 2), which may be brass for example, the rough fracture face F of the member Z being arranged in contact with a face F^1 of the brass member.

As shown in Fig. 3, the member Z may in a practical form be placed in a liquefied mass of fusible metal M contained in a metal cup C, the face F being exposed from the fusible metal, which is allowed to cool and harden so that the conductor Z becomes embedded in good electrical contact therein.

In Fig. 4 the mounting of Fig. 3 for the conductor Z is shown in position so that the surfaces F and F^1 of Z and A respectively (Fig. 2), face each other. The face F^1 of the suitable conductor A may or may not be rough and may have any desired shape or extent. An insulating base B has metallic standards E, G secured to it by screws R, T, these standards being provided with binding posts O, Q for the leads 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 circuit for oscillating or alternating currents.

The member A is simply the end of a threaded brass rod L which is screwed into the standard E.

The cup C for the member Z is supported by a rod V to which it may be non-rotatably secured in any suitable manner; the rod V having a rotating and sliding fit in the sleeve J, which is provided with a knurled rotating-head H which turns the rod V and

cup C by means of the pin P extending from rod V into a longitudinal slot Y in the sleeve J. The sleeve J may have annular lugs W which snugly fit the standard G. A helical spring S is located between the rod V and head H to which its ends may be soldered or otherwise suitably secured. The proportions may be such as to press the contact surface of member Z against member A with a pressure of about an ounce, although variations from this will do no harm unless the pressure be made so excessive as to destroy the small dimensions of the good contact which naturally exists, under such pressure, between the contact surfaces F and F^1 of the respective members Z and A. A fiber cylinder K incloses the apparatus between the standards E, G.

In Fig. 5 is shown a holder in which the conductor Z may be manually moved directly, being mechanically held in circuit between the other conducting member L^1 (which may be brass, and suitably secured to the oscillating rod E^1), and a conducting rod V^1 secured to the standard G^1, the insulating base B^1 supporting the members D and G^1, which are secured to it by screws R^1 and T^1. The part E^1 is pivoted in D at N, so that the member L^1 can be swung to or from the rod V^1, and the spring S^1 (having one end secured to part E^1) provides means for holding L^1 against Z, to hold Z in position between L^1 and V^1 and in operating contact with conducting member L^1. As shown, the screw R^1 is in elevation inside part D, which is shown in section, and beyond part E^1 so that the latter may be freely swung. An adjustment for the spring S^1 is provided, to permit variation of contact pressure between Z and L^1. This adjustment is mounted on the standard P^1, and consists of a rod K^1, to which the right-hand end of the spring P^1 is secured and on which the end of the spring may be wound or unwound, by turning the knurled head H^1 which is secured to rod K^1. The standard P^1 is slotted at Y^1 as far as the perforation in it for the rod K^1, and said rod is held in the perforation from rotation by the spring tension, by means of the screw W^1, but is not so held against a convenient twist on the head H^1. This is a desirable form of holder, but many other suitable forms may be devised.

In operation (Fig. 4), the desired circuit leads are connected to the binding posts O and Q, and by turning the head H, the surface F of member Z is rotated by very slight degrees, simply to adjust it with respect to the coöperating surface F^1 of member A until the best action results, as indicated by the usual telephone in circuit. The operation in the case of Fig. 5 is substantially the same, with respect to the head H^1 and the binding posts Q and Q^1. The character of the 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 telephone, 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.

Various other conductors, which may make operative contact with member Z, may be used with said member, and the mechanical combination of various modes of use may be unlimited.

I claim:

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

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