C. A. GLASS.

COHERER.

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1,118,410.

Patented Nov. 24, 1914.

Fig. 1.

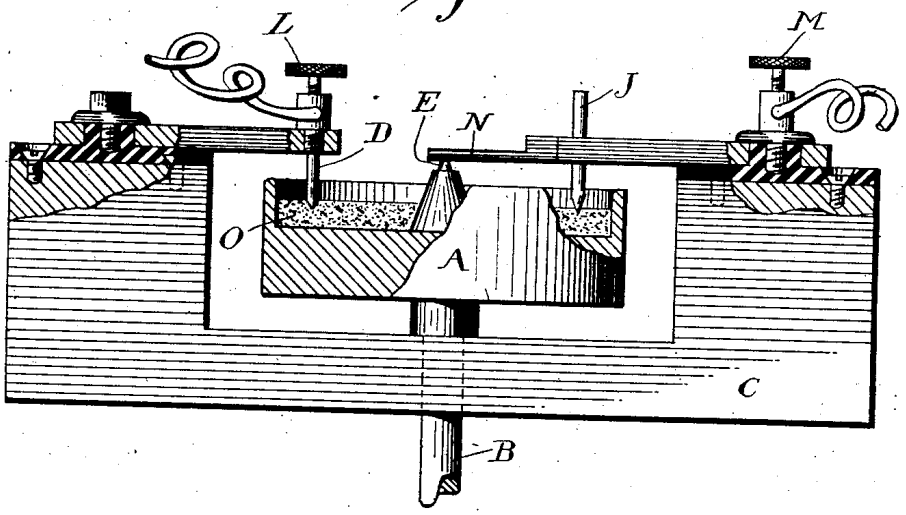
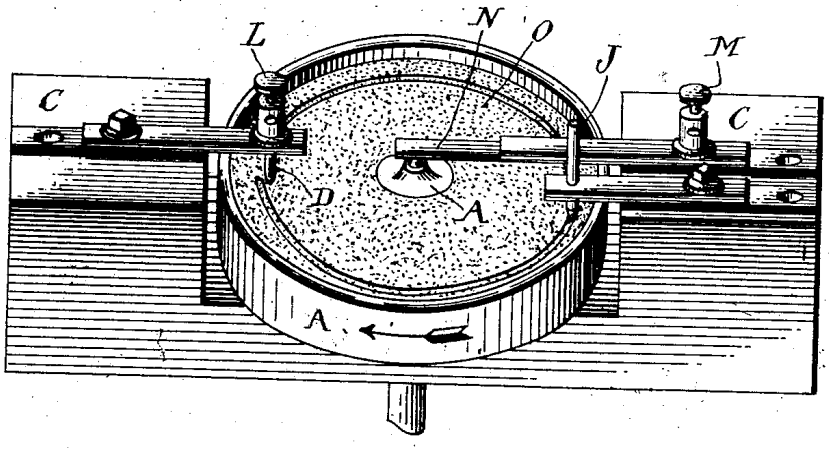


Fig. 2.



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UNITED STATES PATENT OFFICE.

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COHERER.

1,118,410. Specification of Letters Patent. Patented Nov. 24, 1914.

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To all whom it may concern:

Be it known that I, CHARLES ALEXANDER GLASS, a citizen of the United States, residing at Greensburg, in the county of Kiowa and State of Kansas, have invented new and useful Improvements in Coherers, of which improvements the following is a specification.

The object of my invention is to adapt the coherer to detect oscillation of a frequency or rate of succession corresponding to the frequency or rate of succession of telephone currents.

The device by which I attain this object is illustrated in the accompanying drawings in which:

Figure 1 is an elevated view showing the mechanical construction of the device, and Fig. 2 is a perspective view best showing the disposition of the contact elements.

Similar letters refer to similar parts throughout the two views.

The member A is a receptacle adapted to support and retain the coherer particles and is rotated by the actuating shaft B which shaft is journaled in the frame C.

The member O is a body of pulverized carbon carried in an annular cavity in the surface of the receptacle A. The bottom of the cavity continuous to and including an elevated pivotal center E is good conducting material. The member D is a brass wire or rod electrically connected with the terminal binding post L, and projecting into the surface of the body of pulverized carbon.

N is a brush making electrical connection between the elevated pivotal surface E and the terminal binding post M.

The members are so connected electrically as to conduct any currents passing between the terminals. through the pulverized carbon.

In operation for detecting the "wireless" or "Hertzian wave" oscillations, the instrument is connected up through the terminals, in the path of the oscillation and the receiver circuit. The cup A being in this instance about three-fourths inch in diameter, is rotated at the rate, for telephone purposes, of about one revolution in 1½ minutes.

It will be seen that my improvements relate to that class of coherer detectors in which intermediate conductors, loose particles, or coherer particles, are interposed between the terminal conductors forming one or more series of coherer contacts in the path of conductivity between the terminal conductors.

In the device here shown which is a practical form of my invention there is an extra large mass of the variable resistance element, so that a small portion of said mass may be sufficient for use at any instant of time; that such portion after being cohered by an oscillating impulse of space energy, may be succeeded by a similar portion in time to be affected by the succeeding impulse; and that there may be extra portions sufficient in number to allow sufficient time for decohering each portion before returning same to the coherer gap—or the working position in the line of conductivity between the terminals.

The cup A and the rod D are the terminal conductors. The terminal A has an extensive electric contact surface supporting thereon an annulation of consecutive working portions of the variable resistance element O.

The terminal D is adapted to engage in electric contact with a small portion of the upper surface of the element O. The member A B O is rotated to cause the working portions of the element O to pass successively and in rotation through the working position, or coherer gap, between the terminals.

Now it is apparent that the path of conductivity is through that portion of carbon most directly between the terminal conductors; that the contacts outside this path will not be affected by the oscillations; and that as the cup A rotates new contacts are being introduced into said path, and after each oscillation the contacts affected thereby will be carried out of the circuit and replaced by new ones. It is also apparent that, if the succession of the portions of the element of particles through the path of the currents is rapid enough, the affected contacts after each oscillation will be removed and the normal coherer resistance will be restored in time to detect the next oscillation. To develop the maximum strength of current variation to most distinctly affect the receiving instrument—it is desirable to retain the effect of the oscillation as long as possible and yet clear the circuit of the lowered resistance in time for the next oscillation.

It is apparent that the rate of succession of the portions of the element of particles

through the path of the currents required depends on the rate of succession or frequency of the oscillation; and it will be understood that the cup A can be rotated at such rate as to secure a required rate of succession.

Experiment demonstrates that the device can be adapted to detect and distinguish oscillations of a fresuency corresponding to that of telephone currents.

The projecting members D and J circulate alternately in adjacent annular paths in the surface of the field of particles and the opening of a furrow by one fills the furrow opened by the other. The stirring action of J tends to break up any remaining cohered relation after the passing of the traveling terminal conductor. In this device the actual decohering of the particles occurs outside the path of the receiver current and can have no disturbing effect on said current.

It is characteristic of my invention that the detector can be regulated by the operator to limit the duration of the effect of each oscillation to a required average duration. It is also characteristic that the action restoring the normal resistance is even and continuous.

Having thus described and explained my invention, I desire it understood that I do not limit my claim to the inclusion of all the novel features shown, but what I claim is:—

1. A coherer having two terminal conductors, a coherer gap between the terminal conductors, a variable resistance body of loose coherer particles rotatably mounted in a containing member, the said body disposed in an endless series of sufficient working portions encircling the axis of rotation, a portion of said body engaged directly in the coherer gap, and means for rotating the containing member so as to cause the said portions to pass in rotation through the coherer gap.

2. A coherer having two terminal conductors, a coherer gap between the terminal conductors, a variable resistance body of loose particles rotatably mounted in a containing member, the said body disposed in an endless series of sufficient working portions encircling the axis of rotation, a portion of the said body engaging in the coherer gap, electric resistance restoring means engaging with a succeeding radial portion of said body, and means for rotating the containing member so as to cause the said portions to pass successively and in rotation through the said engaging positions.

3. A coherer having two terminal conductors, a variable resistance body of loose coherer particles rotatably mounted on the electric contact surface of one of the terminal conductors, the said body disposed in an endless series of sufficient working portions encircling the axis of rotation, the other terminal conductor engaging in the surface of a portion of the variable resistance body, and means for rotating the supporting terminal conductor so as to cause the said portions to pass in rotation through the said engaging position.

4. A coherer having two terminal conductors, a variable resistance body of loose coherer particles rotatably mounted on the electric contact surface of one terminal conductors, the said body disposed in an endless series of sufficient working portions encircling the axis of rotation, the other terminal conductor and a redistributing member engaging in succeeding portions of the said body, and means for rotating the supporting terminal conductor so as to cause the said portions of said body to pass successively and in rotation through the said engaging positions.

5. A coherer having a plate or cup of loose coherer particles, a terminal or electrode engaging in the upper surface of the element of particles, and the cup and the terminal adapted to move continuously relatively to each other so as to cause the engaging terminal to engage successively with succeeding portions of the body of particles.

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