(No Model.)

# F. C. WATKINS.

## KROTOPHONE RECEIVER.

No. 369,378. Patented Sept. 6, 1887.

Fig. 1.

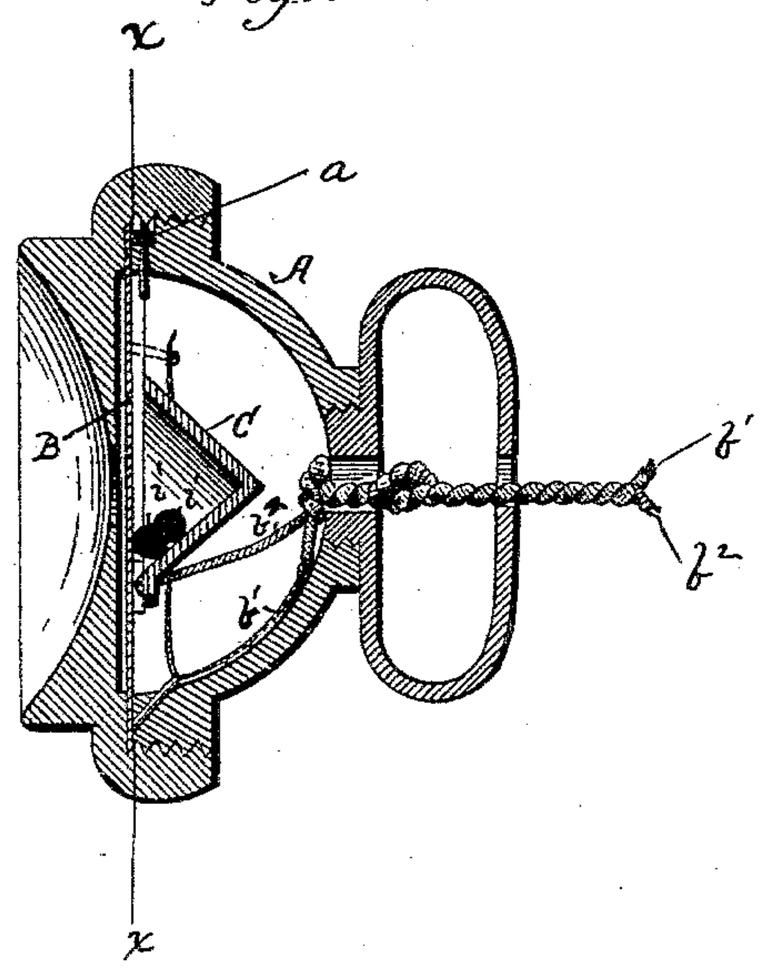
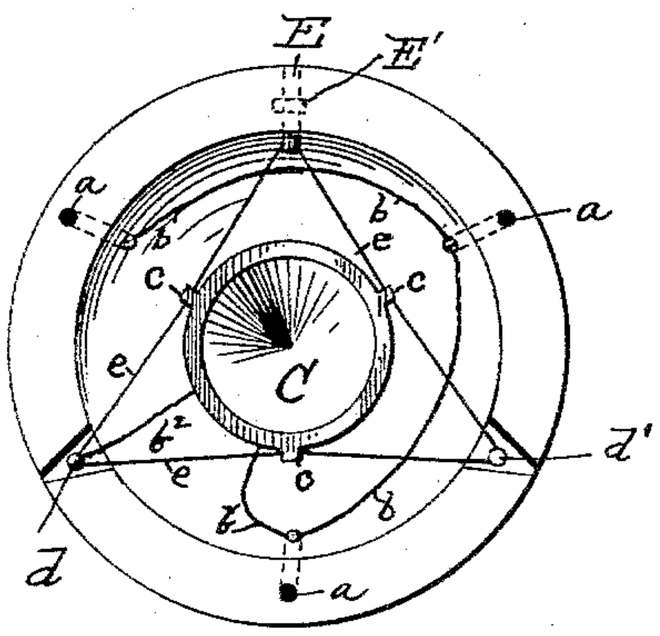



Fig. 2.

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# UNITED STATES PATENT OFFICE.

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## KROTOPHONE-RECEIVER.

SPECIFICATION forming part of Letters Patent No. 369,378, dated September 6, 1887.

Application filed December 24, 1886. Serial No. 222,474. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK. C. WATKINS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Krotophone-Receivers; 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 has relation to apparatus for reproducing articulate sounds through the medium of crepitations or minute crackling sounds or detonations, whereby the original disturbances in the transmitter, when transmitted over the line-wire, may be reproduced in a receiver without the aid or use of magnets, diaphragms, helices, secondary currents, or induction-coils, or the use of any vibrating material whatever; and to these ends the novelty consists in the method of and apparatus for reproducing and receiving the human voice or other articulate sounds through the medium of a series of crepitations or intermitting crackling detonations, as will be hereinafter more fully set forth.

The present application is an improvement upon the United States Patent No. 345,084, granted July 6, A. D. 1886, to which reference is made for a fuller description of the principle and operation of this form of receiver.

In the accompanying drawings the same letters of reference indicate the same parts of the invention, in which—

Figure 1 is a longitudinal section of one form of apparatus employed to carry out my method of reproducing sound, and Fig. 2 is a vertical section of the same on the line *x x* of Fig. 1.

A is an ordinary hard-rubber case, and B is a carbon or other electrically-conducting disk suitably secured in the case, so that its periphery will form an electric contact with a series of connections, *a a a*, which are joined together by a wire, *b*, forming a continuation of the line-wires *b'*.

C is a conical metallic cup, provided with integral ears or lugs *c*, having each a hole, through which a continuous wire, *e*, passes. One end of this wire *e* is secured to a tension-screw, E, which passes through a nut, E', suitably secured in the case. The wire then passes through one of the lugs *c*, thence around a rigid pin, *d*, through another of the lugs, *c*, around a pin, *d'*, through a lug, *c*, and thence back to the starting-point on the screw E. The screw is then set up until considerable tension is produced on the wire which suspends the cup with reference to the disk in the position shown in Fig. 1. This cup is in electrical connection with the second line-wire, $b^2$, through the tension-wires *e* to the pin *d*, and from the interior of the cup C the current passes through one or more small carbon spheres, *i*, to the disk B. It will thus be seen that the transmitted current from the line is conducted to a given point, which is one of the carbon spheres, and from thence to the center of the disk, where it is radially dispersed, as is fully set forth in the patent above referred to.

I have found that the distinctness and amplitude of the sounds are best when the cup-supporting wire *e* has a considerable degree of tension, and this effect is very materially varied by increasing or diminishing the tension on said wire; but I consider the method of conducting the current to the carbon sphere and from the sphere to the disk the most important feature of the present invention, for in the krotophone-receiver referred to above the instrument requires adjustment from time to time, owing to the disintegration constantly going on between the point of the pencil and the disk, while in my present invention this disintegration is compensated for by the sphere automatically adjusting itself by gravity and always preserving its relative position with reference to the disk. Of course it will be

understood that the disk-current from the transmitter is conducted to, and directly to, the disk, and thence direct to the ground.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

The combination, in a krotophone-receiver, of a suspended conducting-cup provided with two or more movable conducting-spheres, with a conducting-disk having a circumferential connection, as set forth.

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

FRANK. C. WATKINS.

Witnesses:

H. J. ENNIS,

J. MCNAMEE.