

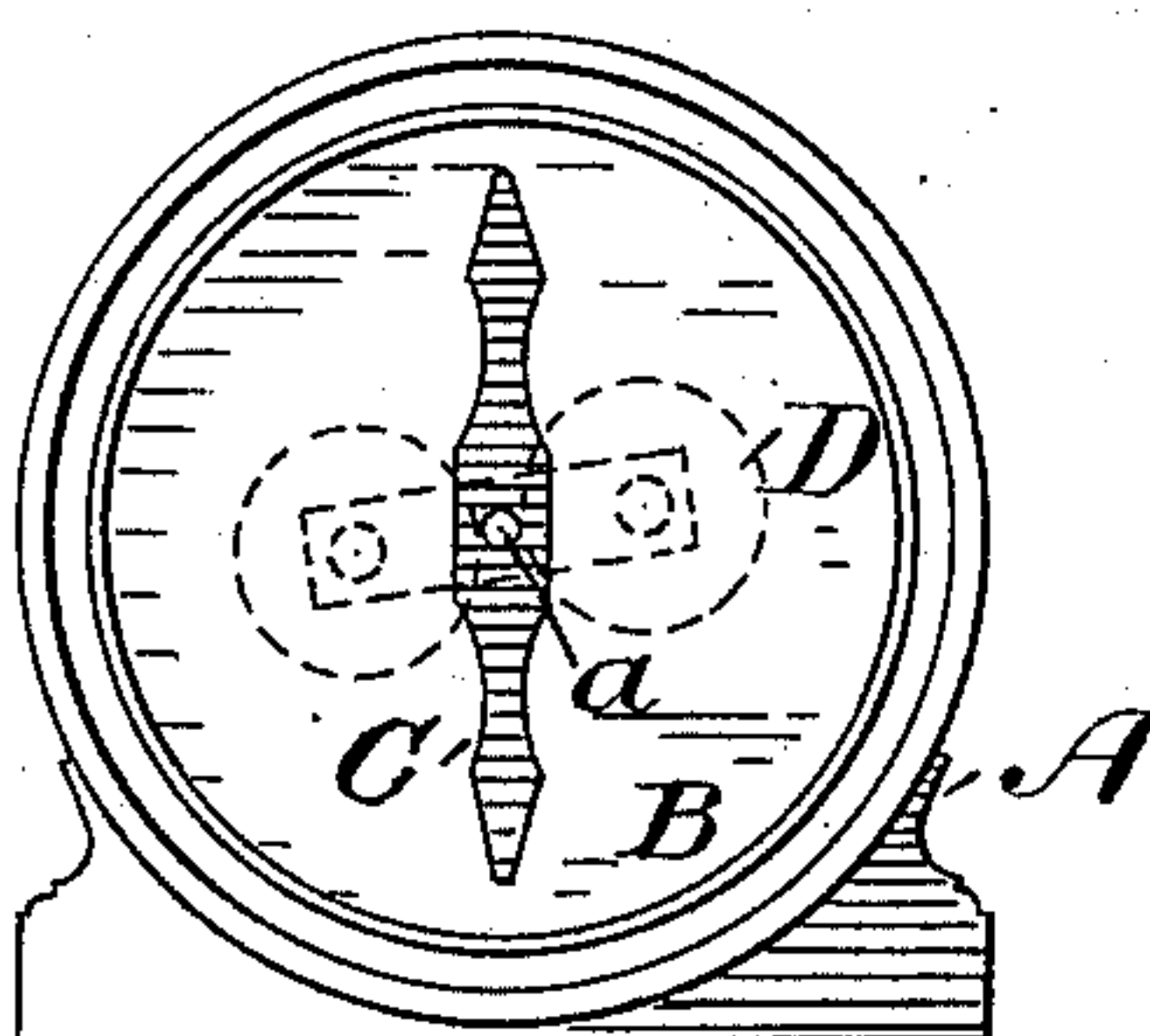
(No Model.)

I. H. FARNHAM.  
ELECTRIC ANNUNCIATOR.

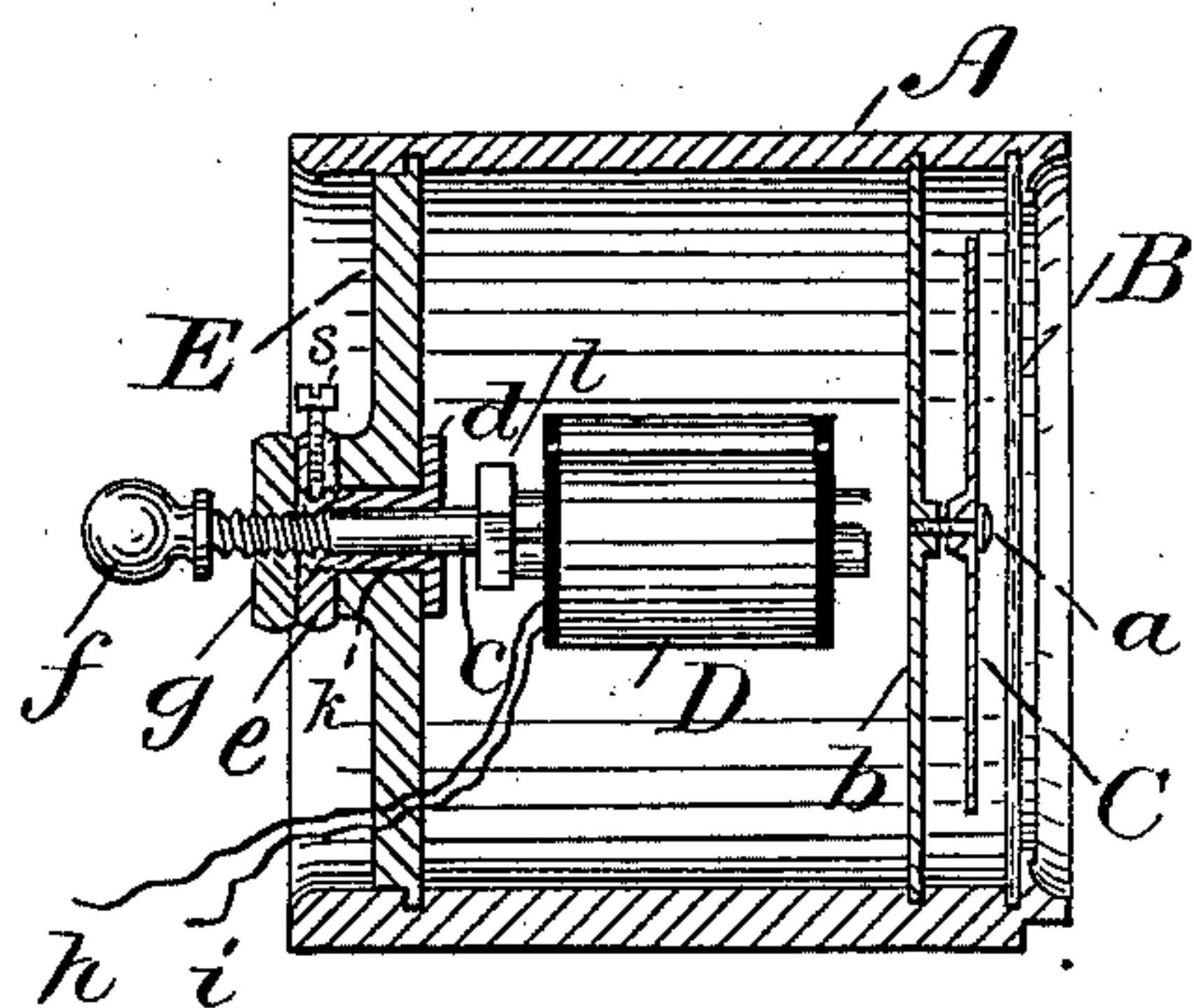
No. 294,212.

Patented Feb. 26, 1884.

*Fig. 1.*



*Fig. 2.*



Witnesses.

*Philip Mauro.*

*C. J. Hedrick*

Inventor.

*I. H. Farnham.*

by his Attorney.

*Anthony Collo R*

# UNITED STATES PATENT OFFICE.

ISAIAH H. FARNHAM, OF PORTLAND, MAINE, ASSIGNOR TO THE AMERICAN BELL TELEPHONE COMPANY, OF MASSACHUSETTS.

## ELECTRIC ANNUNCIATOR.

SPECIFICATION forming part of Letters Patent No. 294,212, dated February 26, 1884.

Application filed December 26, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ISAIAH H. FARNHAM, of Portland, in the county of Cumberland and State of Maine, have invented certain Improvements in Electric Annunciators, of which the following is a specification.

This invention constitutes an improvement in electric annunciators, in which the deflection of a magnetized needle produced by the presence of an electric current in a circuit normally open or inert gives a visual signal.

In Letters Patent dated July 17, 1883, and numbered 281,478, for "Telephone System and Apparatus," I have shown and described the annunciator which forms the subject of my present invention, in connection with improved telephone-exchange appliances.

The object I have in view is to produce an annunciator of extreme simplicity and economy in construction, comprising but few component parts, easy to be adjusted, and capable of fully responding to a very weak calling-current of either direction. In this annunciator the adjustments are very simple, comprising only two movements—namely, a to-and-fro movement of the electro-magnet, and also a rotary movement of the electro-magnet.

Figure 1 is a front elevation of the annunciator, and Fig. 2 a sectional side elevation of the same.

The details of construction are as follows: A suitable case, A, is fitted with a glass front, B, and a short distance from the internal surface of the said glass a steel magnet, C, magnetized either permanently or by induction, is delicately pivoted at *a* in a plate, *b*, of brass or other non-magnetic material, or in a similar suitable support. Immediately behind the said support is an ordinary electro-magnet, D, which, by means of an adjusting-screw, *f*, working in a nut or threaded ring, *g*, is capable of adjustment to and from the needle, and also may be turned to any required degree on its axis, as shown in dotted lines in Fig. 1, which is a front elevation of Fig. 2.

The spindle *c* of the adjusting-screw is rigidly attached to the yoke *l* of the electro-magnet, and turns easily in the gland *d*, which is fitted in the recess *k* of the partition E and secured by the lock-nut *e* and set-screw *s*. The threaded part of the spindle *c* is provided with a second lock-nut, *g*, and the head or

handle *f*, in a manner well understood, may also be detachable, for convenience in construction, and be screwed to the spindle. When the magnet is to be adjusted forward or backward from the needle, it is only necessary to loosen the lock-nut *g*, and then push or pull the spindle the required distance forward or backward, afterward tightening up the lock-nut *g* once more. If it should be found desirable to cause the needle in its deflection to reach a particular point on the dial, or if the strength of the current operating the indicators should weaken and fail to produce the necessary deflection, a compensation may be effected by the rotary adjustment of the electro-magnet, whereby it is enabled to act more or less powerfully on the said needle. This adjustment is accomplished by loosening the lock-nut *g*, and then turning the spindle *c* to the left or right, as may be desired. The needle C may also be slightly weighted, if necessary, at its lower end; but this will not usually be requisite, and I do not prefer it, as the sensitiveness of the annunciator is thereby impaired. The electro-magnet D may be connected with any electric circuit by means of the wires *h* and *i*.

One great advantage possessed by my annunciator over others used in telephony consists in the fact that it resumes its normal position as soon as the circuit is opened at the signal-sending point. It is, moreover, capable of responding differently to currents of either direction, a current of given direction producing a deflection to the right, while a current of opposite direction produces a deflection to the left.

Having now described my invention, I claim—

An annunciator consisting of an electro-magnet capable of horizontal and rotary adjustment, and provided with a magnetic and polarized needle pivoted in front of or between the poles of the electro-magnet, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 21st day of December, A. D. 1883.

ISAIAH H. FARNHAM.

Witnesses:

ARDON W. COOMBS,

FRANK S. WATERHOUSE.