

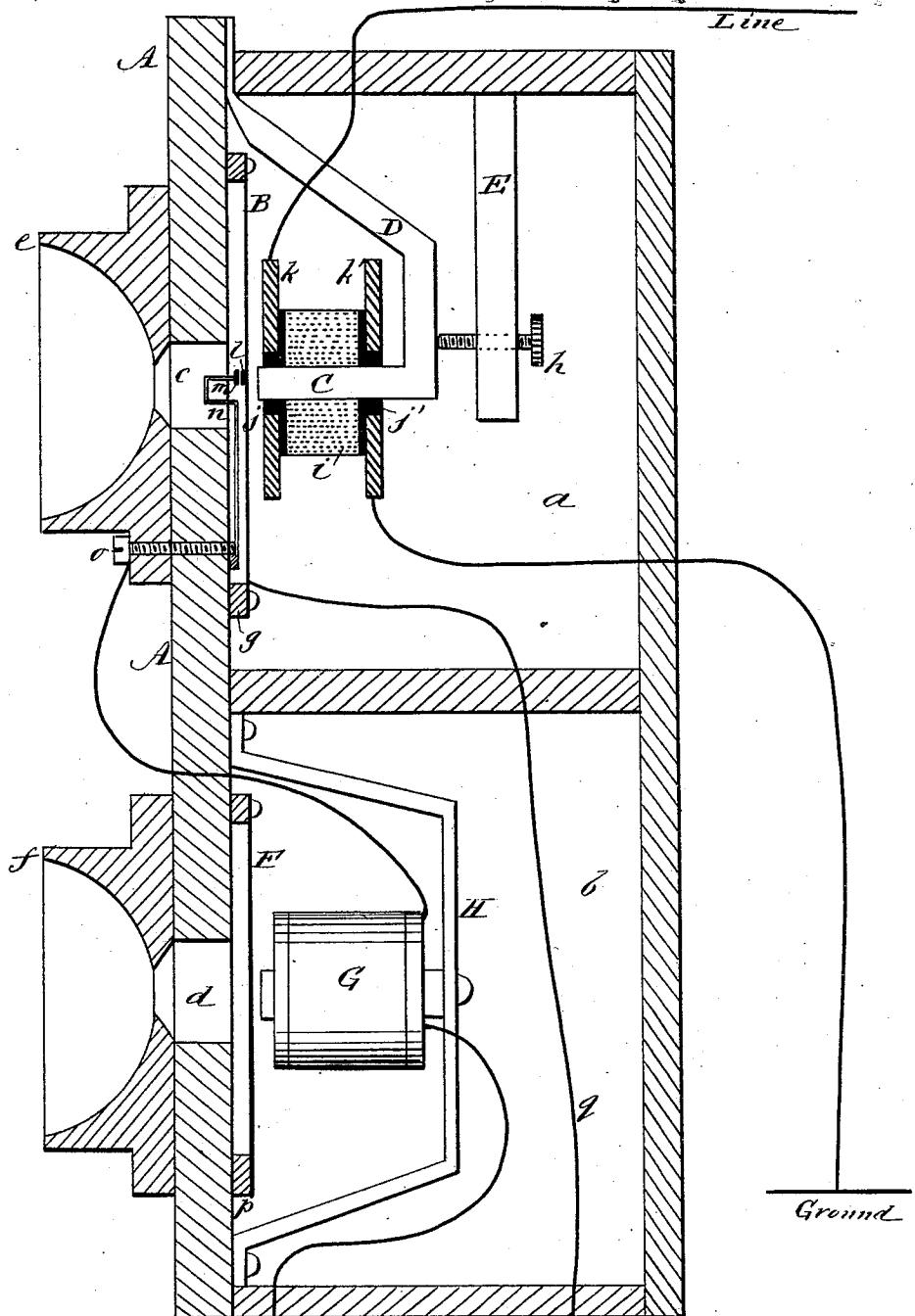
(No Model.)

C. EGAN.

TELEPHONE.

No. 282,969.

Patented Aug. 14, 1883.



WITNESSES:

*C. Neveux*  
*C. Sedgwick*

INVENTOR:

*C. Egan*  
*mm*

BY

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

CHARLES EGAN, OF ZANESVILLE, OHIO, ASSIGNOR OF TWO-THIRDS TO  
DANIEL S. ROBESON, OF NEW YORK, N. Y., AND EDWARD A. LESLIE,  
OF WASHINGTON, D. C.

## TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 282,969, dated August 14, 1883.

Application filed September 29, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES EGAN, of Zanesville, in the county of Muskingum and State of Ohio, have invented a new and Improved Telephone, of which the following is a full, clear, and exact description.

My invention relates to telephones for transmitting articulate speech; and it consists of a duplex instrument formed of two magneto-  
10 telephones—one in the main-line circuit, the other in a local circuit—operated by electrical contact-points controlled by the diaphragm of the main-line instruments.

Reference is to be had to the accompanying drawing, forming part of this specification, in which the figure is a transverse vertical section of my improved telephone.

A is a box divided into two compartments, a b, each apertured in front, respectively, at c d, and provided with mouth-pieces e f of the usual form. In the compartment a, over the opening c and concentric therewith, is secured a magnetic metal diaphragm, B, the same being separated from the front of the box A by a ring, g. Near and opposite the center of the diaphragm B there is a permanent magnet, C, having an angled arm, D, bent upward and forward, and secured to the inner surface of the front of the box A.

30 Behind the magnet C, and secured to the top of the box A, there is an arm, E, carrying a milled screw, h, which touches the permanent magnet C, and serves to adjust the position of the said magnet relative to the diaphragm B.

Upon the permanent magnet C, near the end next the diaphragm, is placed a bobbin, i, of fine insulated wire. On the magnet C, at the ends of the bobbin, are placed vulcanite collars j j', and upon these collars are secured the carbon disks k k', of larger diameter than the bobbin i. One terminal of the bobbin i is connected with the carbon disk k, the other terminal of the bobbin being connected with the carbon disk k'. The carbon disks k k' are connected, respectively, with the line and ground wires.

50 The front of the diaphragm B is provided with a central platinum contact-point, l, which is touched by a platinum contact-point, m, carried by a spring, n, attached at one end to the inner side of the front of the box A by the bolt o.

In the compartment b, over the opening d and concentric therewith, is secured an iron 55 diaphragm, F, its periphery being separated from the front of the box A by means of the ring p. Opposite and near the center of the diaphragm F there is an electro-magnet, G, whose core is secured to the frame H, attached to the front of the box A. One terminal of the wire of the magnet G is connected with the bolt o, the other with the battery I, the latter communicating by the wire q with the diaphragm B. An electrical 60 impulse passing over the line-wire connected with the instrument traverses the wire of the bobbin i and produces variations of intensity in the power of the magnet c. This results in the movement of the diaphragm B and a 65 variation of contact between the platinum contact-surfaces l m, effecting a fluctuation of the local current traversing the coil of the magnet G, altering the intensity of the magnet and producing a movement of the dia- 70 phragm F.

This instrument is connected by the line-wire with a similar instrument at a distant station. Speech is transmitted by talking in the mouth-piece e, and is received by listening at the mouth-piece f.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In a relay-telephone, the combination of the mouth-pieces e f, provided with the dia- 85 phragms B and F, the diaphragm B having an electrical contact-point, l, spring n, with one end provided with an electrical contact-point, m, and its other end connected to the screw o, permanent magnet C, arranged near 90 to the diaphragm B, and having the bobbin of insulated fine wire i, vulcanite collars j j', and disks k k', magnet G, disposed near to the diaphragm F, the battery I, the wires connecting the screw o of the spring n with 95 magnet G, the magnet G with the battery, and the diaphragm B with the battery, and the line and ground wires, substantially as set forth.

CHARLES EGAN.

Witnesses:

F. A. SEBORN,  
S. A. GUTHRIE.