

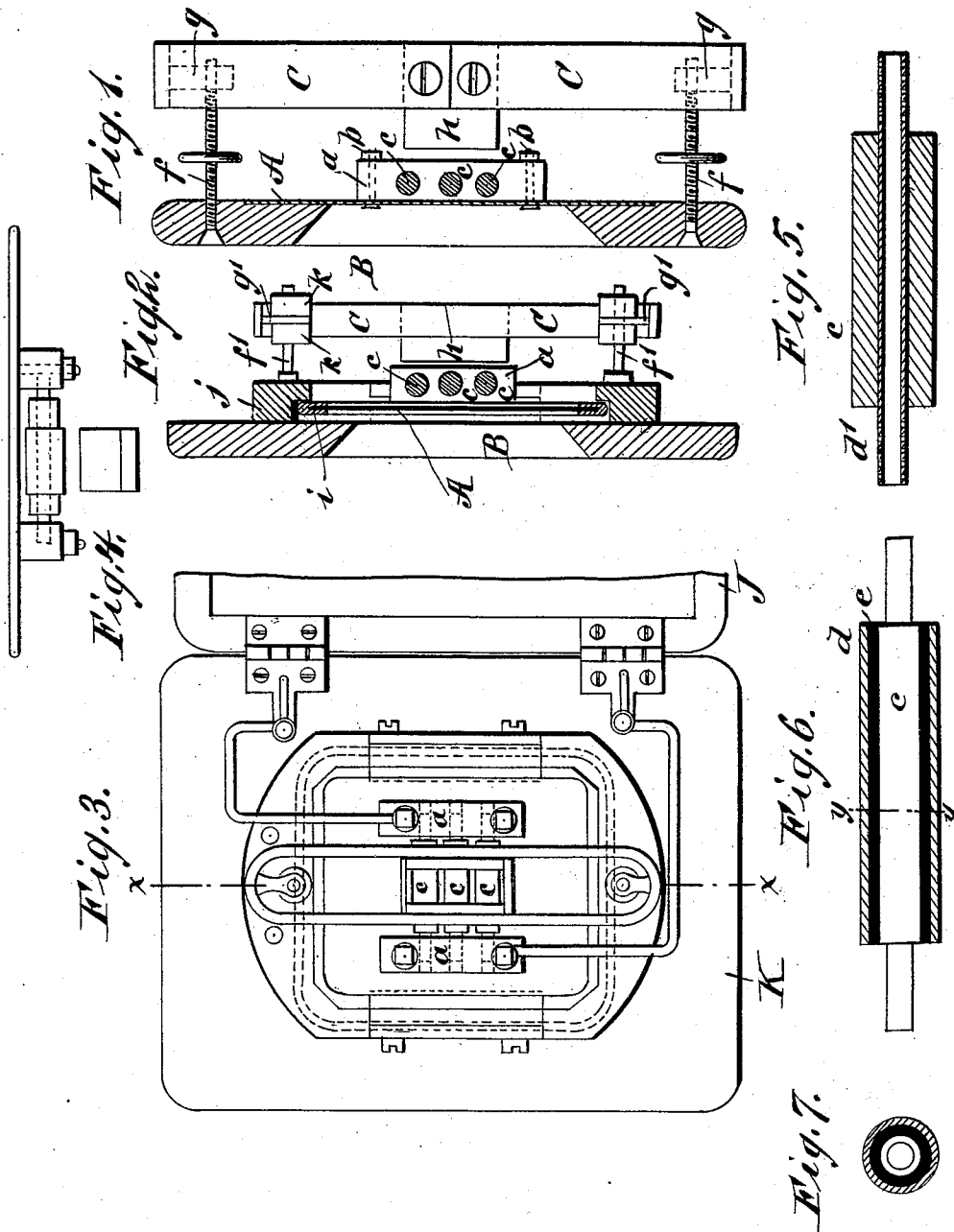
(No Model.)

2 Sheets—Sheet 1.

E. NORIEGA.
ELECTRIC TELEPHONE.

No. 508,830.

Patented Nov. 14, 1893.



WITNESSES:

E. M. Orde
C. Sedgwick

INVENTOR:

E. Noriega
BY *Munn & Co*
ATTORNEYS

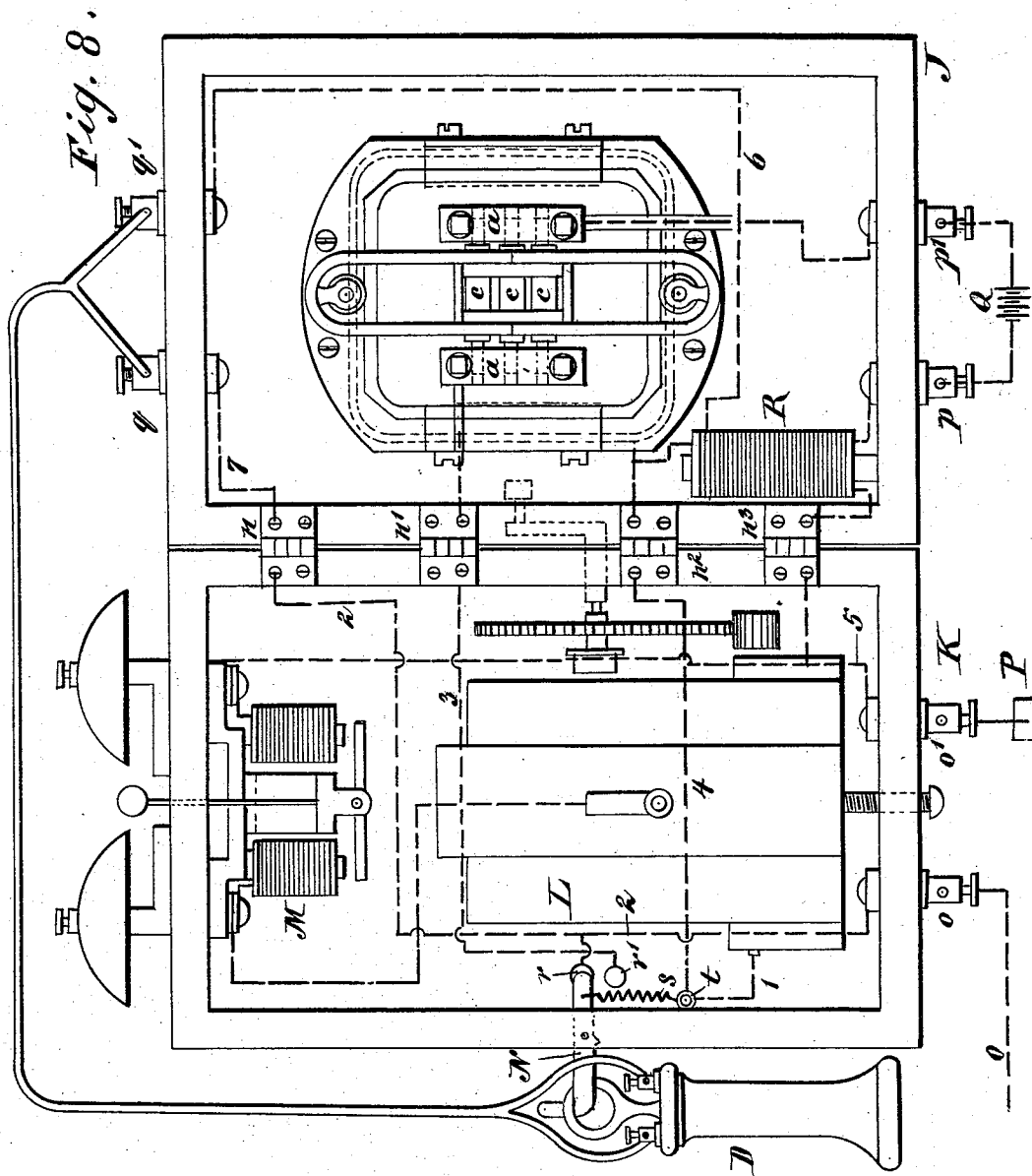
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F. M. Andle.
W. Sedgwick

INVENTOR

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UNITED STATES PATENT OFFICE.

ELOY NORIEGA, OF MEXICO, MEXICO.

ELECTRIC TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 508,830, dated November 14, 1893.

Application filed August 25, 1892. Serial No. 444,042. (No model.)

To all whom it may concern:

Be it known that I, ELOY NORIEGA, of the city of Mexico, Mexico, have invented a new and Improved Telephone System, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and figures of reference indicate corresponding parts in all the views.

Figure 1 is a side sectional elevation of my improved telephone transmitter on the line $x-x$ in Fig. 3. Fig. 2 is a diametrical section of a modified form. Fig. 3 is a rear elevation of the telephone transmitter. Fig. 4 is an enlarged detail view of a modified form of the transmitting mechanism. Fig. 5 is a longitudinal section of one of the carbon cylinders. Fig. 6 is a modified form of carbon cylinder. Fig. 7 is a transverse section on the line $y-y$ in Fig. 6. Fig. 8 is a front elevation of the complete apparatus.

The object of my invention is to provide a telephone transmitter in which the carbon electrodes will be held in contact by the action of a magnet, thus securing a more delicate adjustment of the carbons and more effective action of the telephone.

My invention consists in a microphone provided with a diaphragm carrying two perforated blocks in which are inserted carbon cylinders provided with soft iron armatures and a magnet located near the said armatures for holding the carbon cylinders in electrical contact with the carbon blocks carried by the diaphragm.

In the transmitter shown in Fig. 1, the diaphragm A is secured to the back of the mouth piece B, and to the diaphragm are fastened two carbon bars a , by means of bolts b . The diaphragm in this case is made of insulating material, and the carbon bars a are apertured transversely to receive carbon cylinders c . The said carbon cylinders fit loosely in the apertures and are provided with soft iron armatures d or d' . The soft iron armatures d consist of soft iron tubes surrounding the carbon cylinders but separated therefrom by the insulating tube e .

In the case illustrated in Fig. 5, the arma-

ture d' is inclosed by the carbon cylinder c . In the back of the mouth piece B are inserted screws f , the outer ends of which are swiveled in arms g projecting inwardly from ends of the permanent magnets C. The said magnets are placed with like poles adjoining each other, with pole pieces h secured to their inner faces. The said pole pieces h project toward the carbon cylinders c and act upon the armatures connected with the cylinders drawing the said carbon cylinders with more or less force toward the pole pieces. The amount of force exerted by the magnets C upon the armatures carried by the carbon cylinders is regulated by the distance between the pole pieces h and the armatures of the said carbon cylinders.

In the form shown in Figs. 2 and 3, the construction is substantially the same. The diaphragm A is provided with a binding i of soft rubber or analogous material, and the said diaphragm is held in a frame j . To the diaphragm are secured carbon bars a as in the other case, and threaded studs f' projecting from the frame j pass through ears g' extending from the inner surfaces of the curved ends of the magnets C and nuts k placed on opposite sides of the ears g' , serve to adjust the magnets toward or away from the armatures carried by the carbon cylinders c . In other respects, the construction of the microphone shown in Figs. 2 and 3, is the same as that already described.

The telephone transmitter is secured to the door J of the casing K and the mouth piece B is formed integrally with the door. The cover of the casing K is connected with the casing by hinges n, n', n^2, n^3 , each of which serves to form an electrical connection between the apparatus carried in the cover and that contained by the casing. In the casing K are placed a magneto-electric machine L and a magneto-bell M, both of which are of the usual construction and therefore require no special description. In the bottom of the casing are inserted binding posts o, o' ; in the bottom of the cover are inserted binding posts p, p' , and in the top of the cover are inserted binding posts q, q' . The casing K is furnished with a switch lever N which is capable of forming an electrical contact with

either of the contact buttons r, r' , and the outer end of the said lever is bent upward to form a hook for supporting the telephone receiver D.

5 When the telephone receiver is in place upon the hook, the lever N forms an electrical contact with the button r , and when the receiving telephone is removed from the hook, the spring s connected with the inner end of the lever and with the stud t , draws down
10 the inner end of the lever N and brings it into electrical contact with the button r' . The binding post o is connected with a line wire O, the binding post o' , is connected with the
15 ground P, and the binding posts p, p' are connected with opposite poles of the battery Q. The electric circuits will be described in connection with the operation of the apparatus.

When it is desired to call a distant station,
20 the magneto-electric machine L is operated, thereby sending a current in one direction through the magneto-bell M, to the ground P, and in the opposite direction through the wire 1, stud t , spring s , lever N, button r , wire
25 2, to the binding post o , thence over the line O to the distant station. When the call is answered the telephone receiver D is removed from the lever N when the spring s draws down the said lever N bringing it into con-
30 tact with the button r' . The current of the battery Q now flows through one of the carbon bars a , through the carbon cylinders c , the other carbon bar a , hinge n' , wire 3, button r' , spring s , stud t , wire 4, hinge n^2 , pri-
35 mary wire of the induction coil R, binding post p , back to the battery.

When sounds are uttered in the mouth piece B, the vibration of the diaphragm A moves the carbon bars a , and by virtue of
40 the inertia of the carbon cylinders c varies the electrical contact between the said cylin-

ders and the bars a , and the pulsations thus produced in the primary circuit of the induction coil R generate secondary impulses in the secondary wire of the said induction coil, 45 which pass in one direction through the hinge n^3 , wire 5 and binding post o' to the ground P, and in the opposite direction through the wire 6, binding post q' , telephone receiver D, binding post q , wire 7, hinge n , wire 2, bind- 50 ing post o to the line and through the distant receiver.

The diaphragm of the transmitter I make of pine wood and protect it from humidity by coating it with paraffine.

Having thus fully described my invention, I 55 claim as new and desire to secure by Letters Patent—

1. In a telephone transmitter provided with perforated carbon bars and carbon cylinders 60 fitted loosely to the perforations of the bars, the combination with the carbon cylinders, of soft iron armatures and a magnet supported near the armatures and arranged to draw the carbon cylinders into contact with 65 the carbon bars, substantially as specified.

2. In a telephone transmitter, one or more carbon cylinders inclosed by iron ferrules separated from the carbon by insulating material, substantially as specified. 70

3. In a telephone transmitter, the combination with the diaphragm, of contact pieces attached to the diaphragm, a series of electrodes provided with armatures, and magnets arranged to draw the loose electrodes away 75 from the diaphragm and against the contact surface carried by the diaphragm, substantially as specified.

ELOY NORIEGA.

Witnesses:

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EMILIO LOPEZ.