

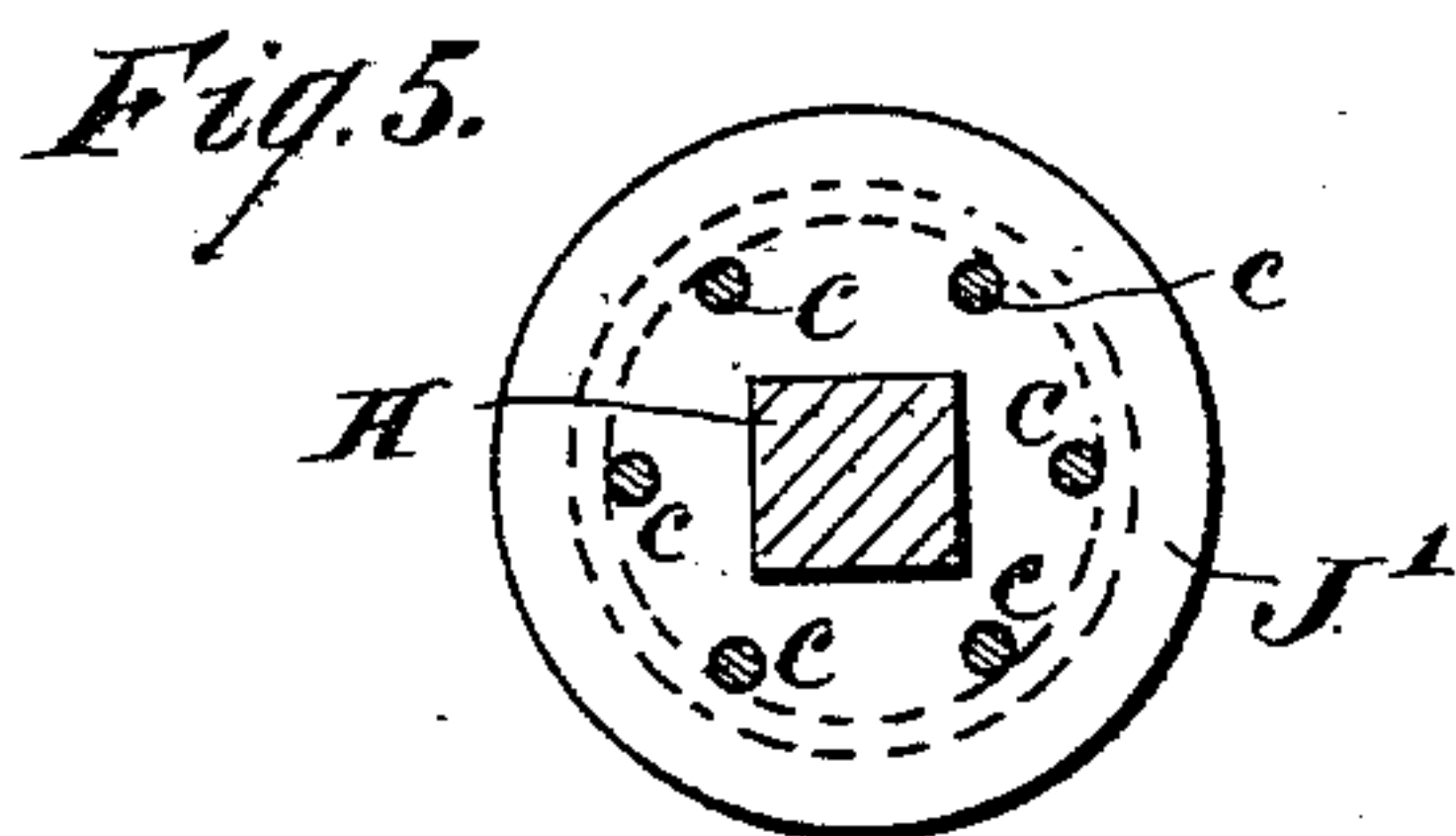
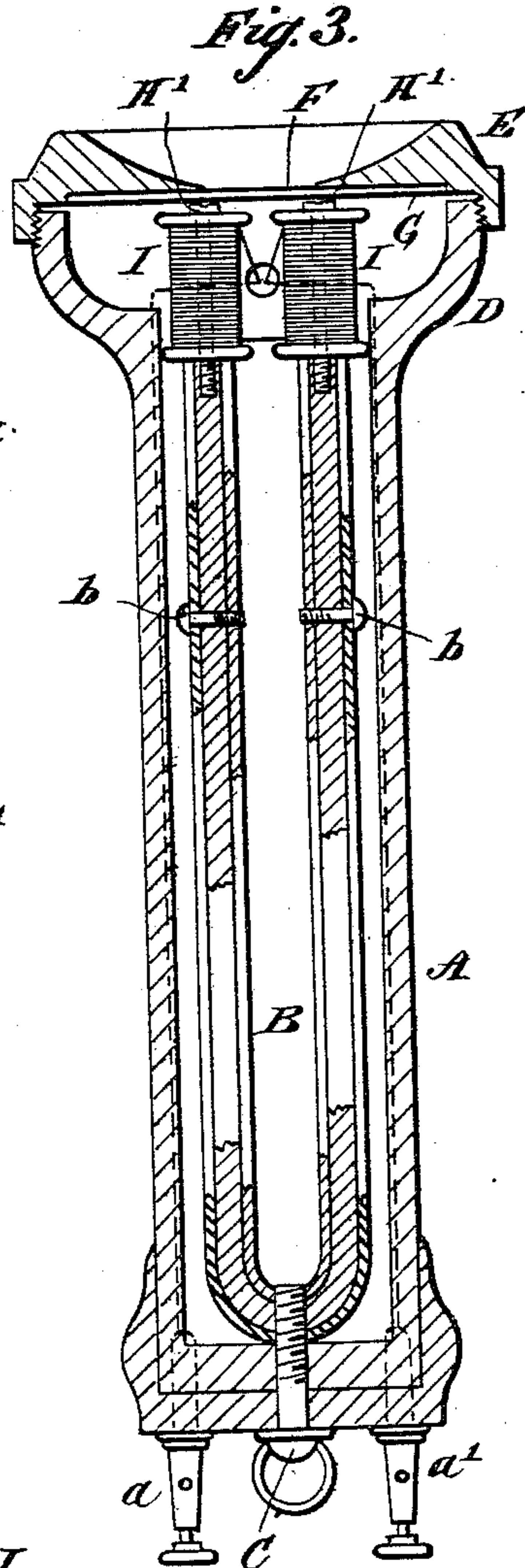
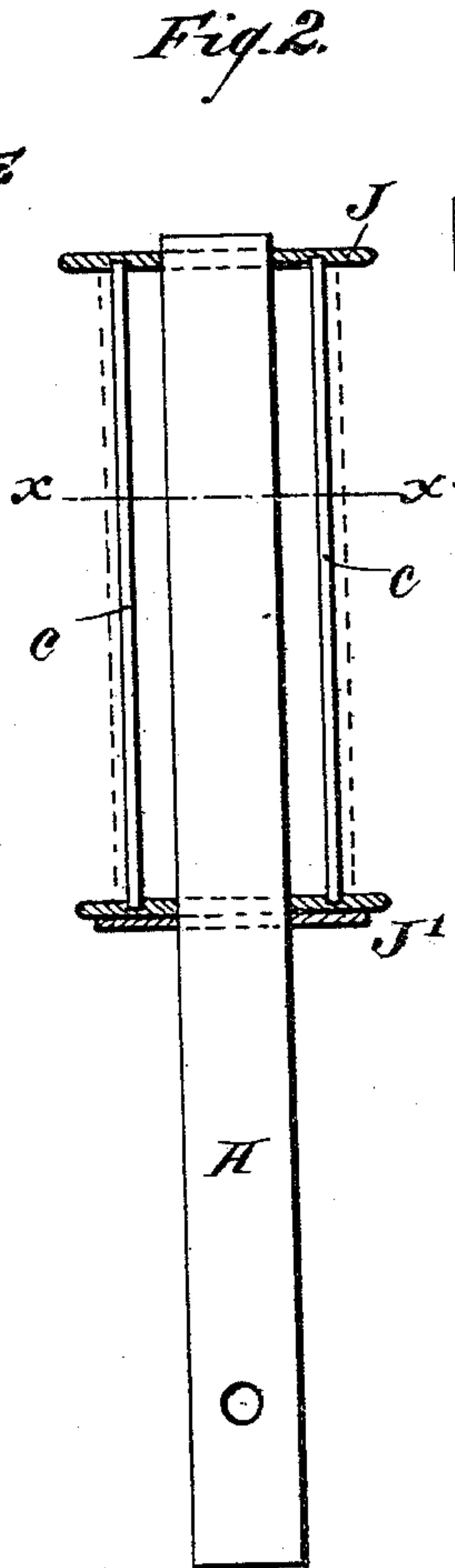
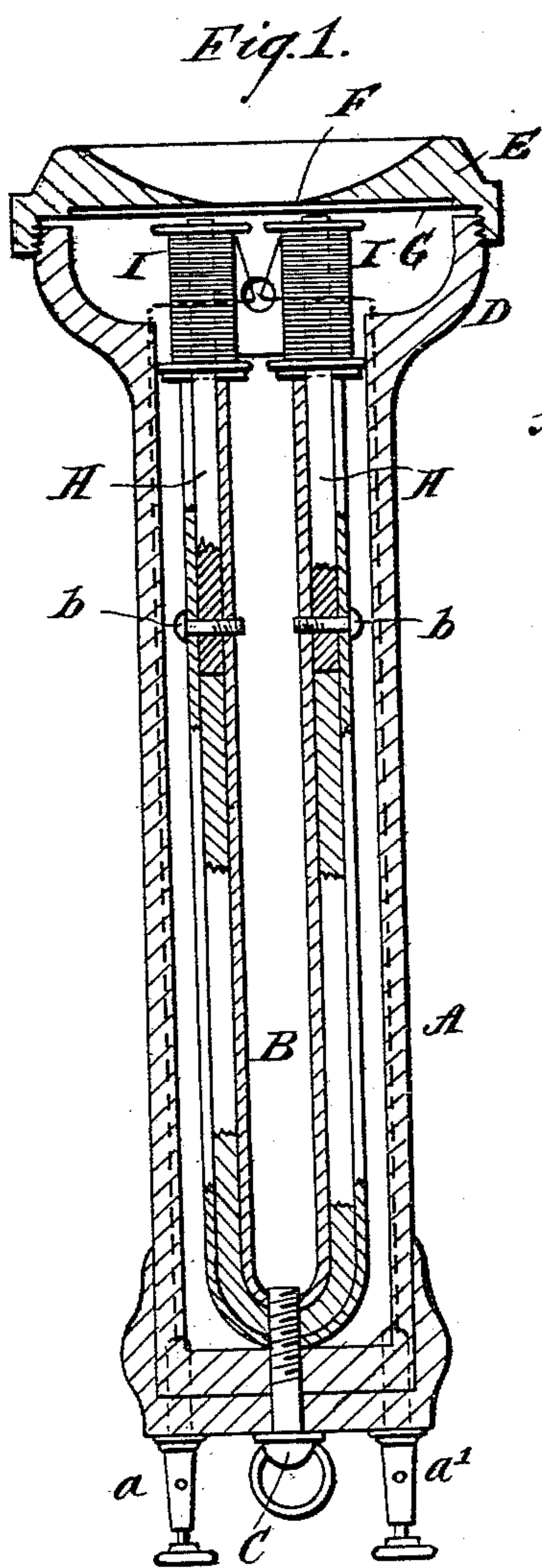
(No Model.)

2 Sheets—Sheet 1.

E. NORIEGA.  
TELEPHONE.

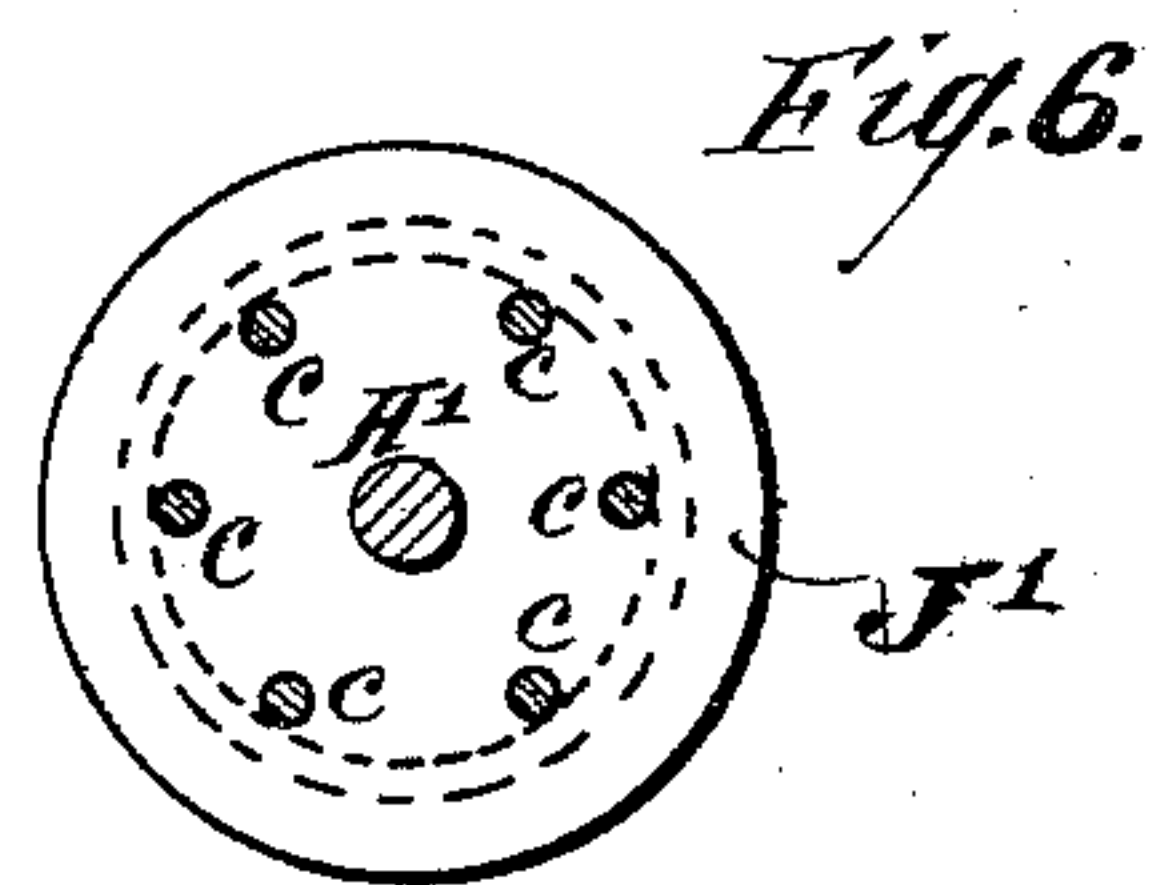
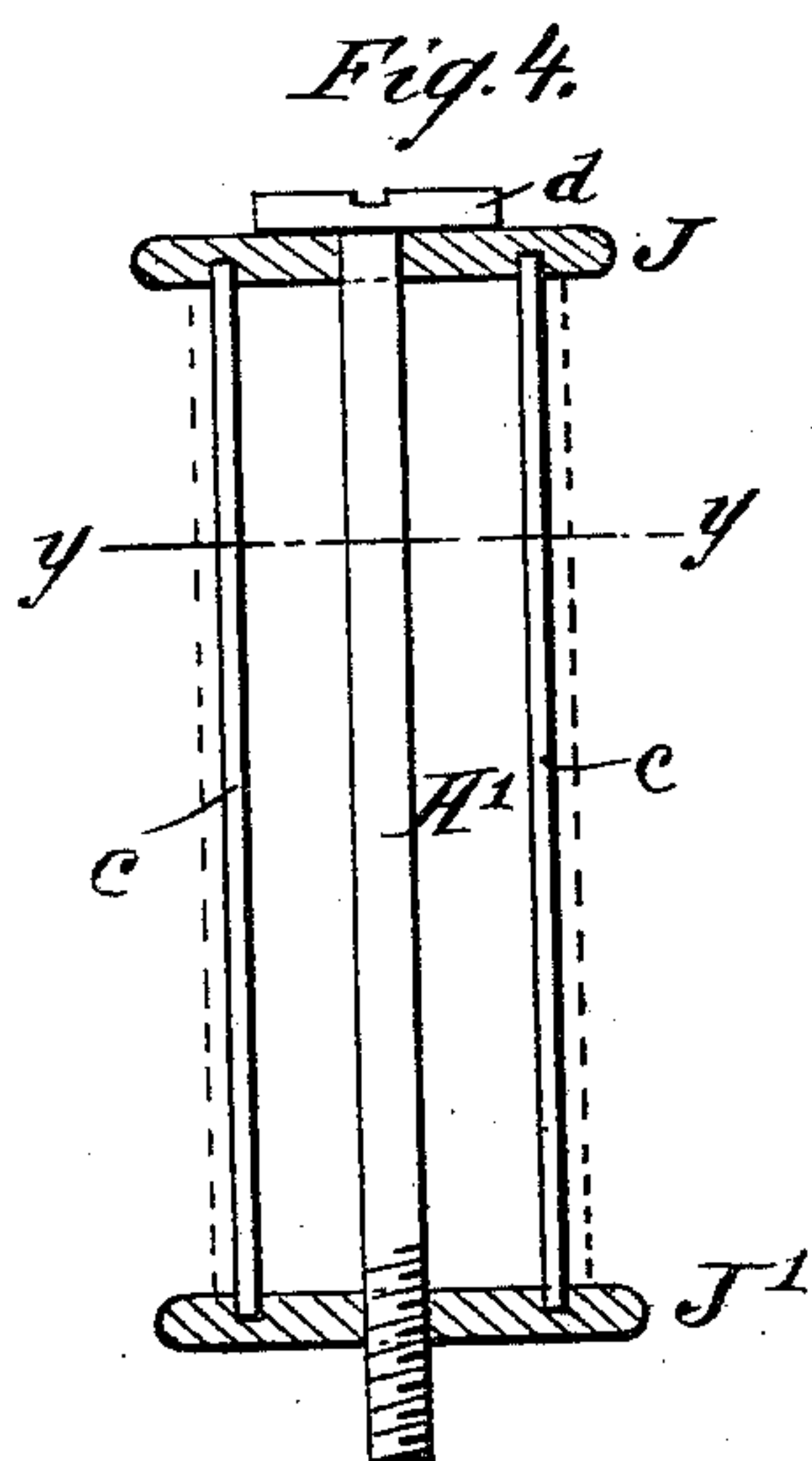
No. 458,479.

Patented Aug. 25, 1891.



WITNESSES:

*Don Twitchell*  
*C. Sedgwick*



INVENTOR.

*E. Noriega*

BY

*Munn & Co*

ATTORNEYS.

(No Model.)

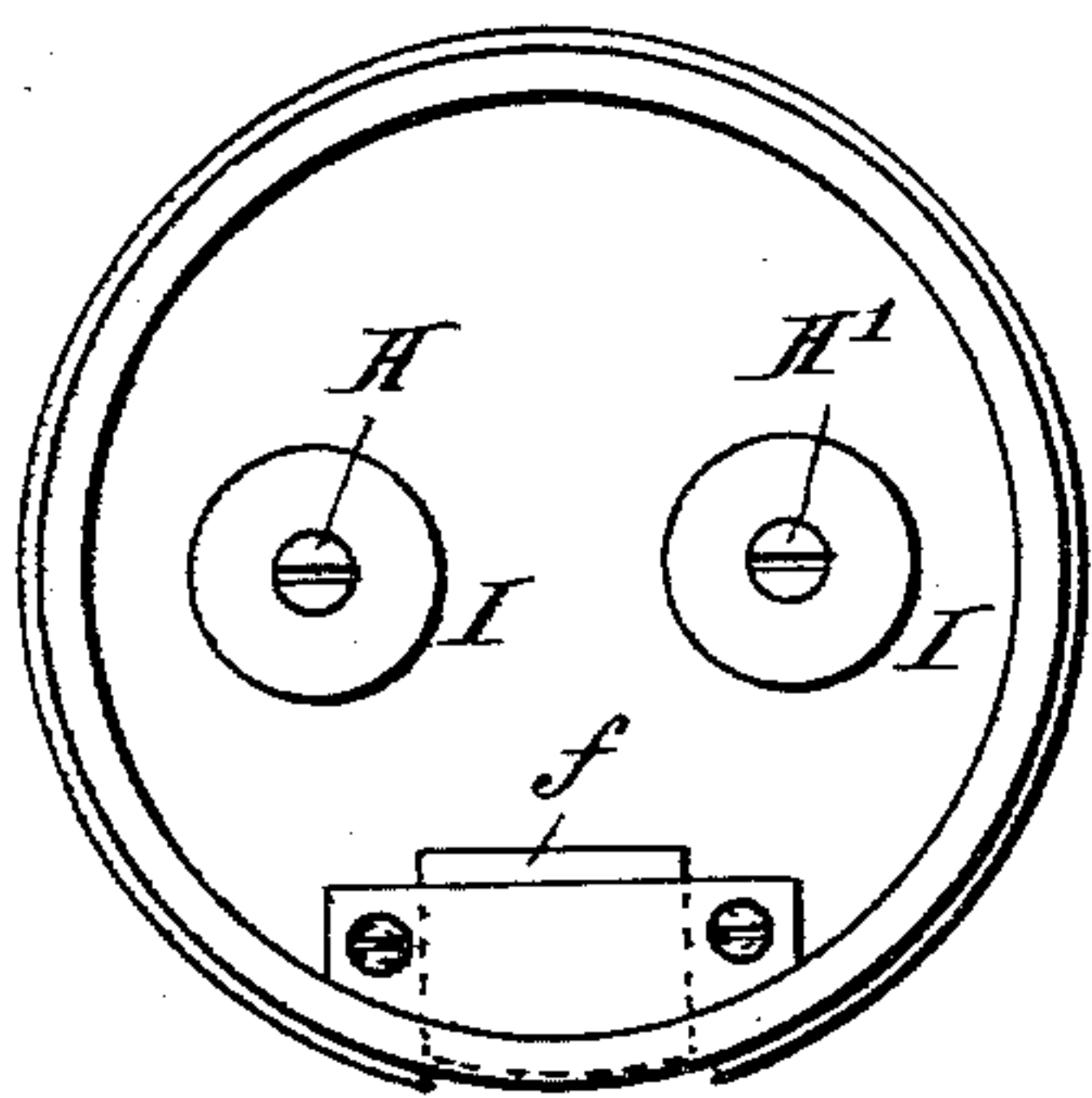
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E. NORIEGA.  
TELEPHONE.

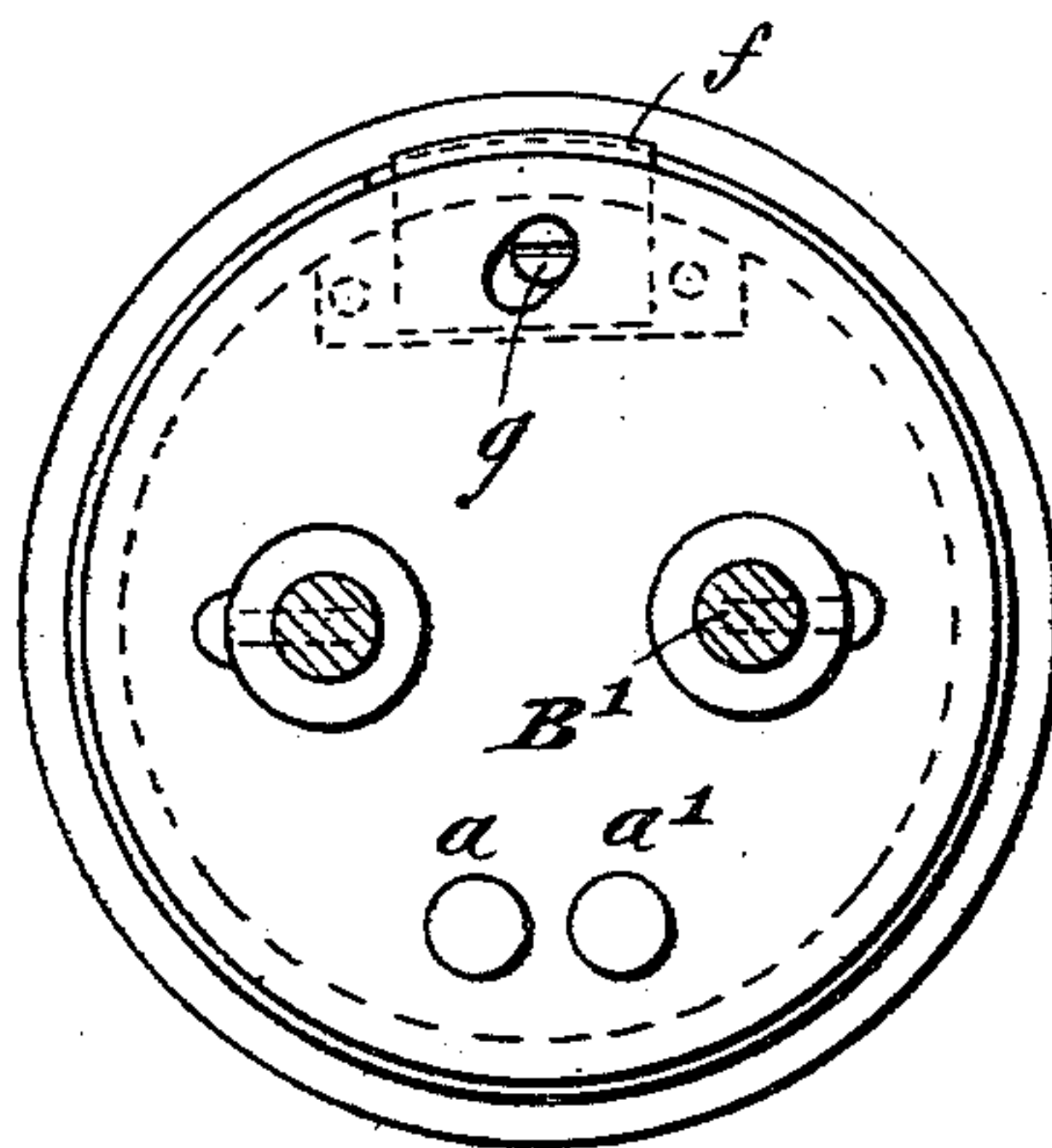
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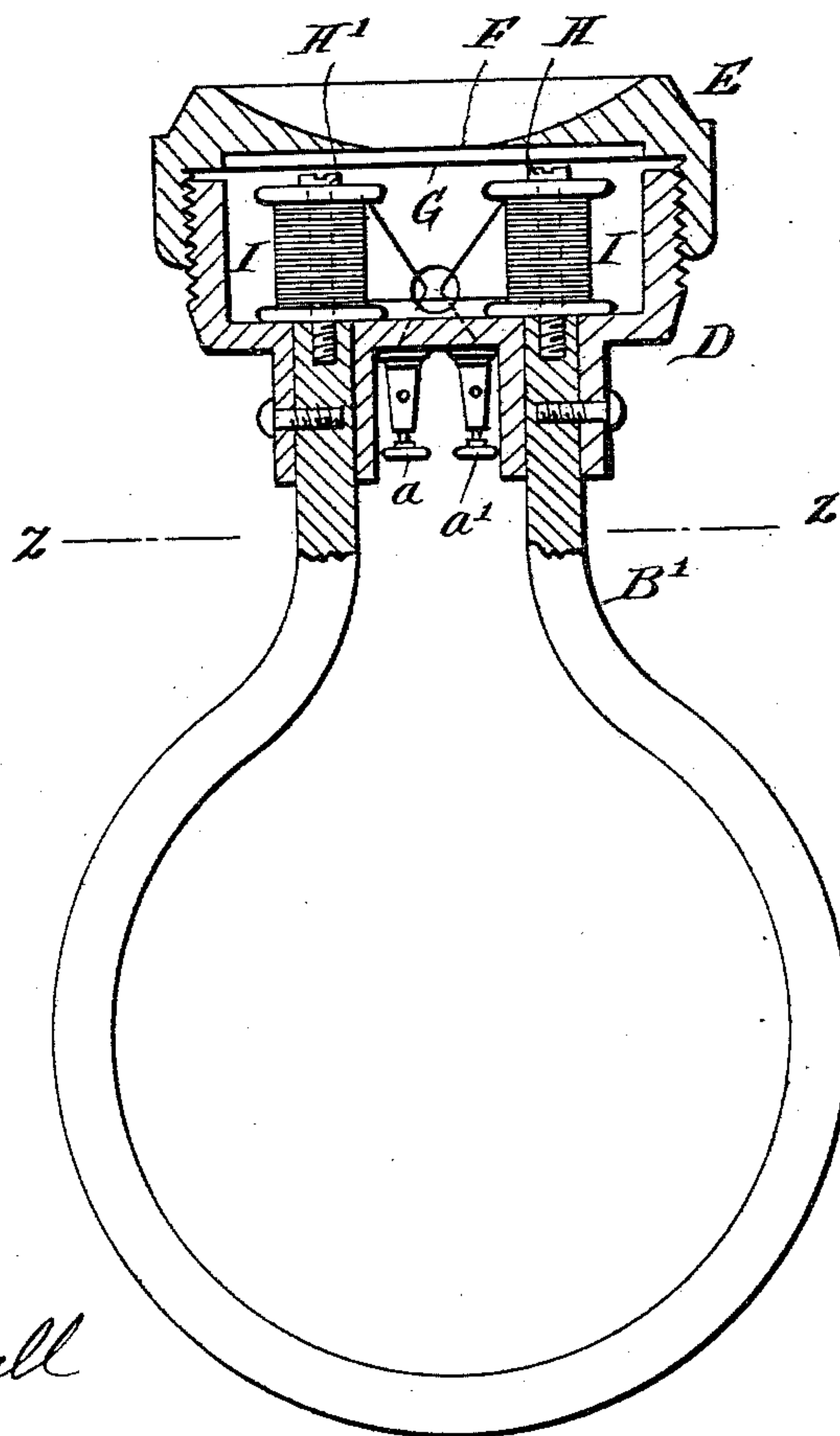
*Fig. 8.*



*Fig. 9.*



*Fig. 7.*



WITNESSES:

*Donn Twitchell*  
*C. Sedgwick*

INVENTOR:

*E. Noriega*  
BY *Munn & Co.*

ATTORNEYS



# UNITED STATES PATENT OFFICE.

ELOY NORIEGA, OF MEXICO, MEXICO.

## TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 458,479, dated August 25, 1891.

Application filed February 4, 1891. Serial No. 380,173. (No model.)

*To all whom it may concern:*

Be it known that I, ELOY NORIEGA, of Mexico city, Mexico, have invented a new and Improved Telephone, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which--

Figure 1 is a longitudinal section of one form of my improved telephone. Fig. 2 is an enlarged sectional detail view of the polar extremity of one of the magnets and the skeleton of the bobbin. Fig. 3 is a longitudinal section of a slightly-modified form of my improved telephone. Fig. 4 is an enlarged sectional elevation of the skeleton of the bobbin and polar extension of the magnet. Fig. 5 is a transverse section taken on line *xx* in Fig. 2. Fig. 6 is a transverse section taken on line *yy* in Fig. 4. Fig. 7 is a side sectional elevation of another modification. Fig. 8 is a plan view of the same with the mouth-piece removed; and Fig. 9 is a transverse section taken on line *zz* in Fig. 7, looking toward the mouth-piece of the telephone.

Similar letters of reference indicate corresponding parts in all the views.

The object of my invention is to provide a simple and effective receiving-telephone to be used in connection with a microphone.

The invention consists in the peculiar construction and arrangement of parts, as hereinafter fully described, and pointed out in the claim.

In the telephone-handle *A* is secured a compound U-shaped magnet *B* by means of screw *C*, passing through the end of the handle and into the bend of the magnet. The opposite end of the handle *A* is enlarged, forming a cell *D*, which is threaded externally to receive the ear-piece *E*. The ear-piece *E* is provided with a central aperture *F* and is concaved upon its outer face, as shown. In the ear-piece *E* is secured an iron diaphragm *G*, which is near the polar extremity of the magnet *B*, but not in contact therewith.

Between the outer members of the compound magnet are inserted pole-pieces *H* of soft iron, which project beyond the permanently-magnetized portions of the magnet and receive the bobbins *I*. The bobbins *I* are connected with each other by one terminal in the same manner as those of an electro-magnet,

the remaining terminals being connected with the binding-posts *a a'* at the opposite end of the telephone-handle. The polar extensions of the magnet are held in place by screws *b*, passing through the arms of the magnet and through the polar extensions. Each bobbin is formed of a pair of soft-iron heads *J J'*, fitted to the polar extensions *H* and provided with cavities, in which are placed the ends of soft-iron wires *c*, which are arranged in a circle and form the frame-work of the bobbins. The wires *c* are wrapped around with paper or other insulating material, and upon the paper is wound a fine wire, forming the conductor of the telephone. The winding will vary, according to the conditions under which the instrument is to be used, and its sensitiveness may be varied by adjusting the diaphragm *G* in the manner already described.

In the modification shown in Fig. 3 the construction is exactly like that already described, with the exception of the polar extensions *H'*, which consist of screws, each having a head *d* of large diameter, the screws being inserted in the central portion of the compound magnet *B*. For the other parts the letters of reference are the same as those used in Figs. 1, 2, and 5.

In the modifications shown in Figs. 7, 8, and 9 the telephone-handle *A* is omitted, and the cell *D* is placed directly upon the poles of a permanent horseshoe-magnet *B* and the bobbins *I* are attached to the poles of the permanent magnet by means of screws *H'*, forming the extensions and having enlarged heads, as described in connection with Fig. 3, and the ear-piece *E* of the telephone is arranged to adjust the distance of the diaphragm *G* with reference to the polar extensions *H'*.

To prevent any change in the adjustment of the ear-piece *E*, the cell *D* is furnished with a slide *f*, which extends outward within a mortise in the casing and is capable of engaging the internal thread of the ear-piece *E*, the said slide being provided with a screw *g*, which extends outwardly through a slot in the diaphragm-cell, the said screw being used for the double purpose of pushing the slide outwardly to engage the thread of the ear-piece and for binding the slide in position after it has been pushed out.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent—

5 A receiving-telephone comprising a hollow handle having an enlargement at one end and provided with an ear-piece having a diaphragm and closing the enlarged end of the handle and at its opposite end with binding-  
10 posts, a permanent compound U-shaped magnet secured in the handle at its bend and provided with pole-pieces secured between the ends of each member of the compound

magnet and extending in close proximity to the diaphragm, and bobbins on the pole-pieces connected with each other by one terminal and having the other terminals connected to the binding-posts, substantially as herein shown and described.

ELOY NORIEGA.

Witnesses:

PEDRO NORIEGA,  
LUIS SANTA MARINA.