G. M. PHELPS.

Carbon-Telephone.

No. 222,202. Patented Dec. 2, 1879.

Fig. 2.

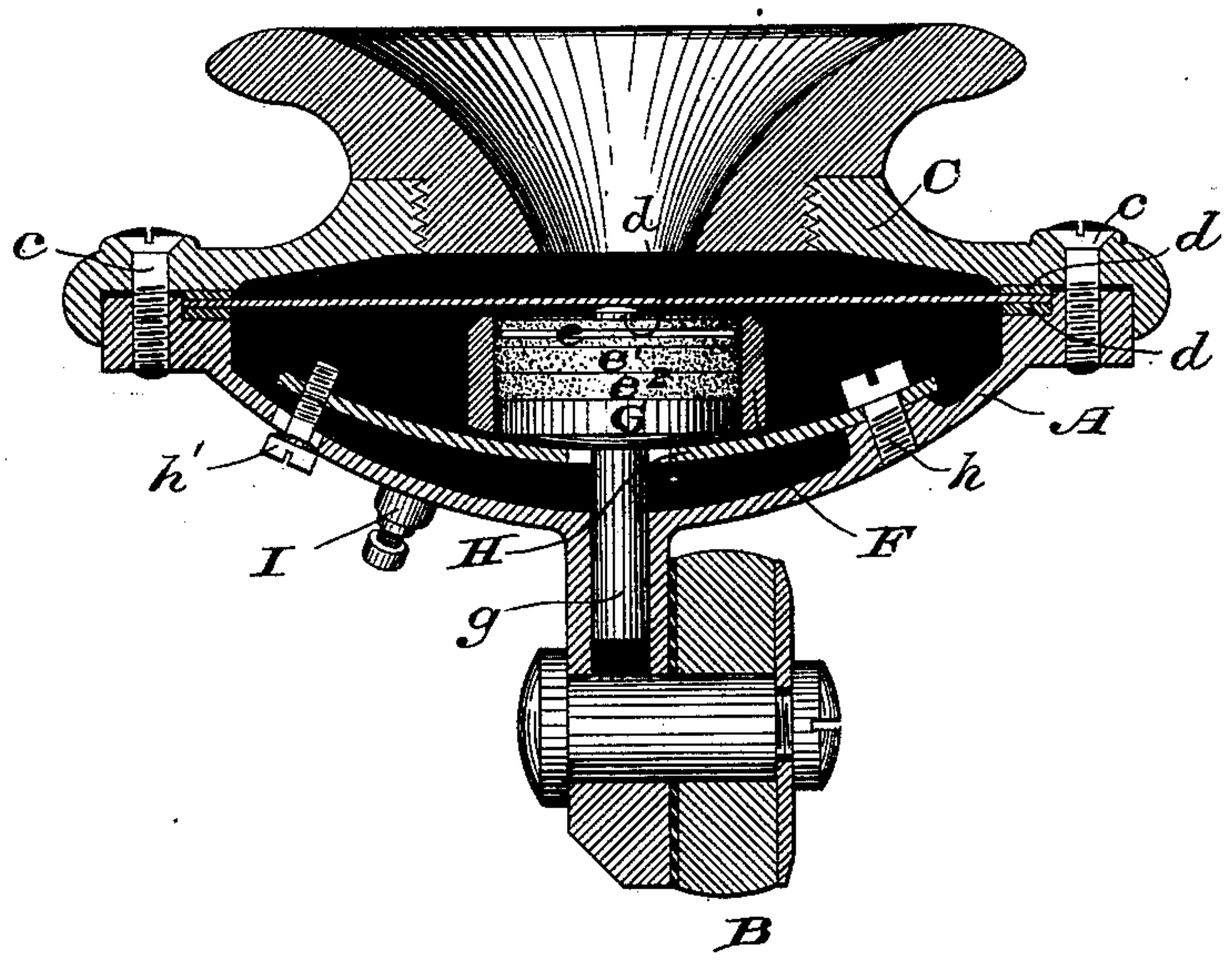
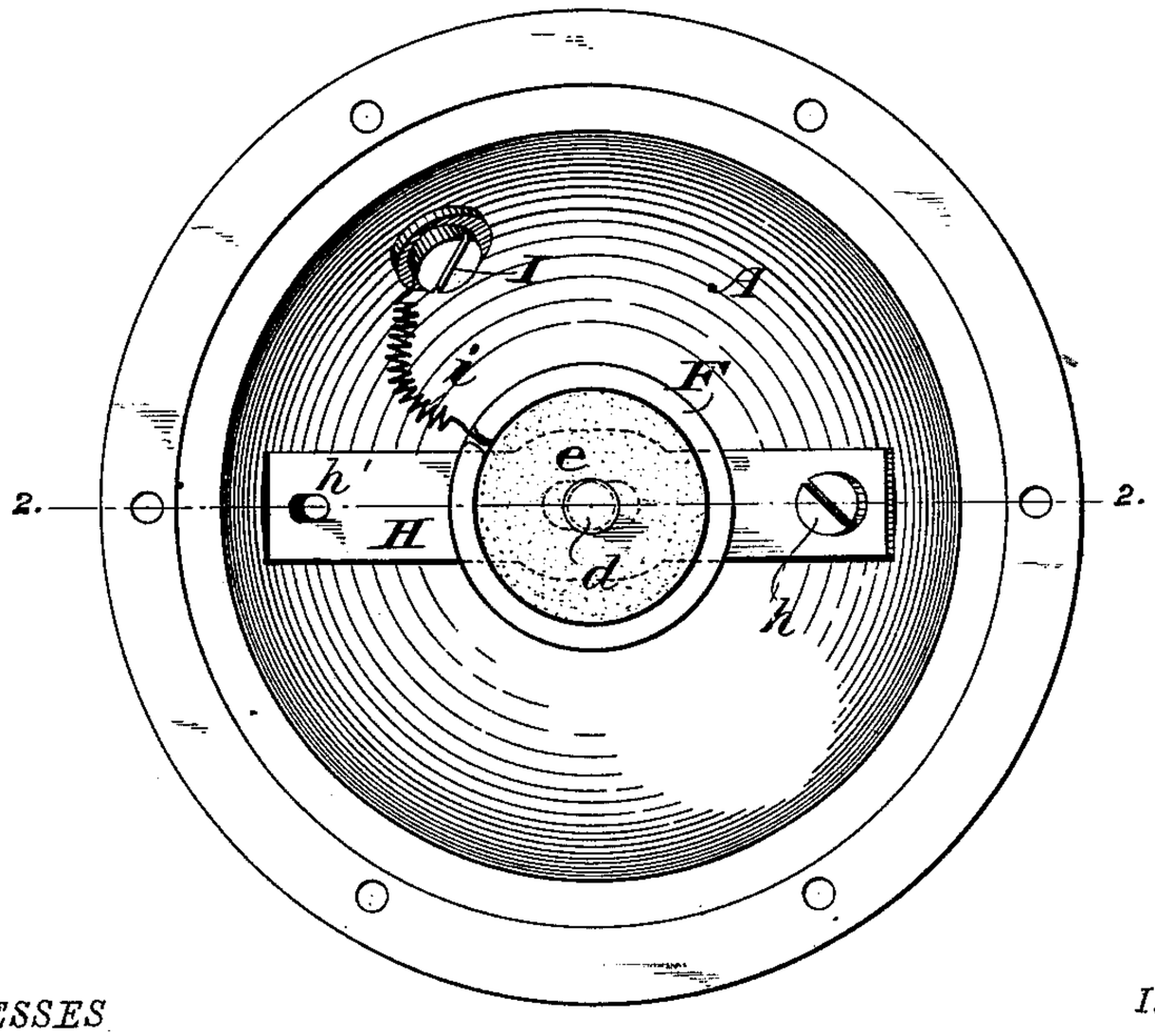


Fig. 1.



WITNESSES

Wm A. Skinkle.

Geo W Breck

INVENTOR

George. M. Phelps.

By his Attorneys

Baldwin Hopkins & Peyton

UNITED STATES PATENT OFFICE.

GEORGE M. PHELPS, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN CARBON-TELEPHONES.

Specification forming part of Letters Patent No. **222,202**, dated December 2, 1879; application filed June 4, 1879.

To all whom it may concern:

Be it known that I, GEORGE MAY PHELPS, electrician, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Transmitters for Electric Speaking-Telephones, of which the following is a specification.

My invention relates to and constitutes an improvement upon that class of carbon transmitters for electric speaking-telephones (shown in Letters Patent No. 214,840, granted to me April 29, 1879) in which the circuit is traversed by a continuous current from a local battery, which current is thrown into waves or undulations by the action of sonorous atmospheric vibrations (caused by articulate sounds uttered in the neighborhood of the transmitting-diaphragm) acting upon a variable resistance inserted in said circuit to vary the strength or intensity of the current in a manner and form corresponding with the vibrations of the diaphragm, as is well understood.

My present invention relates more especially to an improved construction of telephonic transmitting apparatus, whereby it is rendered effective and readily adjustable, while avoiding the liability of crushing the carbons, to which rigid adjusting devices are liable. Carbon-adjusting devices for speaking-telephones are not, however, new, broadly considered, one example of such devices being shown in Edison's Patent No. 203,014, granted April 30, 1878. I therefore limit my claims to the specific organizations hereinafter specified.

In the accompanying drawings, which exemplify the best way now known to me of carrying out the object of my invention, Figure 1 represents a plan or top view of so much of the apparatus as is necessary to illustrate my invention, with the diaphragm, mouth-piece, and cover removed to show the internal mechanism. Fig. 2 represents a vertical central section through the instrument on the line 2 2 of Fig. 1.

The transmitting apparatus proper is shown as inclosed within a bowl-shaped case, A, of metal or other proper material, mounted upon a suitable support, B. The usual mouth-piece is mounted on a cover, C, secured to the case by screws or other suitable fastenings *c*. A diaphragm, disk, or plate, preferably of metal, is stretched across the case, clamped between the case and cover, and provided with the usual dampening-rings *d* on each side thereof. One or more carbon buttons or disks, *e* *e'* e^2, inclosed within a ring, F, of vulcanite, hard rubber, or other suitable insulating material, rests flatwise upon the head G of a spindle, *g*, of metal, movable freely endwise in a guide-slot, *a*, in the casing. A plug, *d'*, of wood or other suitable non-conducting material, resting upon or inserted in the upper carbon disk, bears upon the inner or under face of the diaphragm. The guide-spindle passes through an opening in a stiff plate-spring, H, secured at or near one end to a boss or projection on the inner side of the case by means of a set-screw, *h*, or other suitable clamping device. The other end of the spring is controlled by means of a set-screw, *h'*, passing through an opening in the casing and through a hole in one end of the spring, in order to regulate the pressure of the carbon on the diaphragm.

In the form of apparatus shown in Fig. 2 of the drawings the resilience of the spring tends to keep the carbon pressed against the disk, and the adjustment is shown as effected by drawing the spring away from the diaphragm to diminish the pressure, and as allowing it to approach by releasing the screw. It is obvious that the adjusting-screw could work through a corresponding female screw tapped through the case, so as to force the spring forward to increase the pressure, or withdraw it to diminish it, both means of adjustment being well-known equivalents, although the operation of one is the converse of the other.

The arrangement upon circuit is as follows: One pole of the battery is connected directly with the case A, through which and the guide-spindle the current flows as well as through the carbons, and thence through the wire *i* and binding-screw I, to which the return-wire and local battery are connected in circuit, as usual.

The apparatus is adapted for operation with any of the well-known telephonic receivers now in use.

The mode of generating, transmitting, and reproducing the rhythmical vibrations, undula-

tions, or waves representing articulate speech being similar to that of other telephonic apparatus needs no further elucidation here.

It will thus be seen that by means of my apparatus I am able to maintain the desired pressure upon the carbon and readily to adjust it without danger of crushing, as is apt to be the case where positive adjustments are employed.

I do not broadly claim a spring forming or carrying one electrode of the circuit of a telephone, and constantly pressing against the other electrode and diaphragm to maintain the required initial pressure between the electrodes and yield to the movements of the diaphragm; neither do I broadly claim a yielding weight connected with a movable electrode to resist the movement of a diaphragm and modify by its inertia the variation of pressure between the two electrodes.

I claim as of my own invention—

1. A carbon disk or button (constituting part of a telephonic transmitting apparatus) mounted on a spindle movable endwise through an adjusting-spring to regulate the pressure without danger of crushing the carbon, substantially as hereinbefore set forth.

2. Carbon disks (having their adjacent faces in contact) mounted on a head or guide-spindle supported by and playing loosely through a spring regulated by a set-screw, to adjust the pressure on the carbons, substantially as hereinbefore set forth.

3. The combination, substantially as hereinbefore set forth, of the perforated adjusting-spring, the spindle movable endwise therethrough, the carbon disks mounted on the spindle, and the regulating-screw passing through the case.

4. The combination, substantially as hereinbefore set forth, of the adjusting-spring, the spindle movable therethrough, and the carbon disks and their enveloping-ring mounted on the spindle.

5. The combination, substantially as hereinbefore set forth, of the case, its guideway, the adjusting-spring, the spindle movable in the guideway and through the spring, and the carbon disks carried by the spindle.

6. The combination, substantially as hereinbefore set forth, of the case, its cover and mouth-piece, the diaphragm, the perforated adjusting-spring, the spindle movable endwise therethrough, and the carbon disks mounted on the spindle.

7. The combination, substantially as hereinbefore set forth, of the diaphragm, the adjusting-spring, the movable head, the carbons, and the plug between the diaphragm and carbons.

In testimony whereof I have hereunto subscribed my name.

GEORGE MAY PHELPS.

Witnesses:

ENOS M. BARTON,

FRANK L. POPE.