

(No Model.)

F. H. BROWN.  
TELEGRAPHY AND TELEPHONY.

No. 490,064.

Patented Jan. 17, 1893.

FIG. 1.

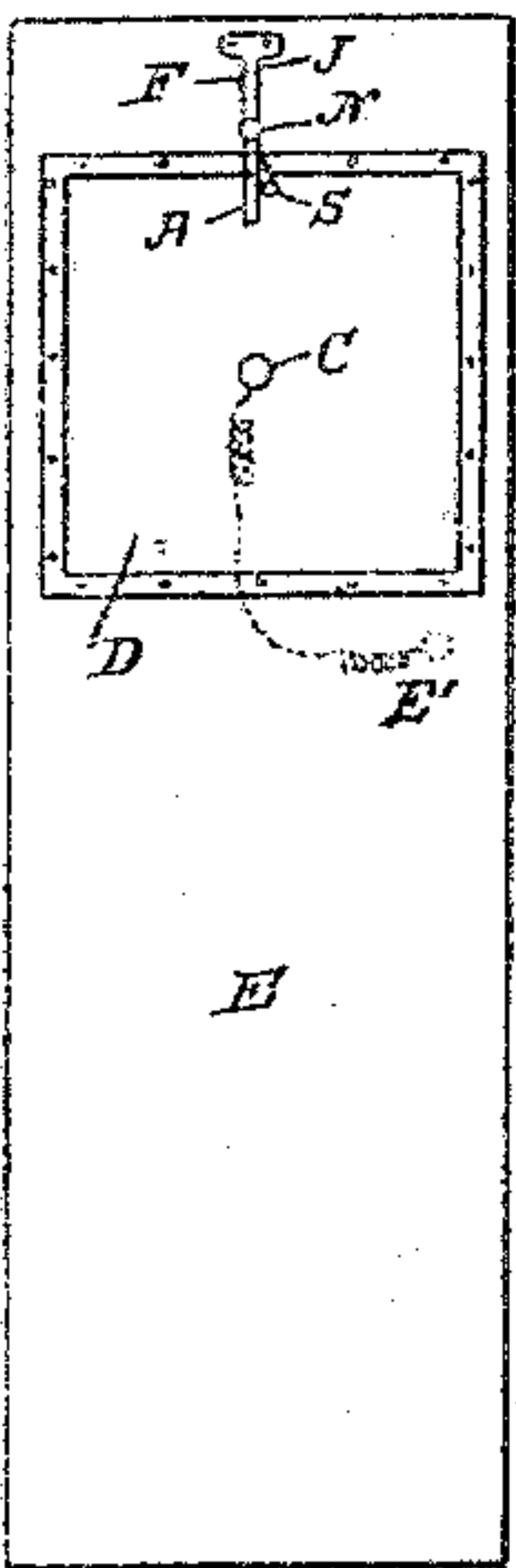


FIG. 2.

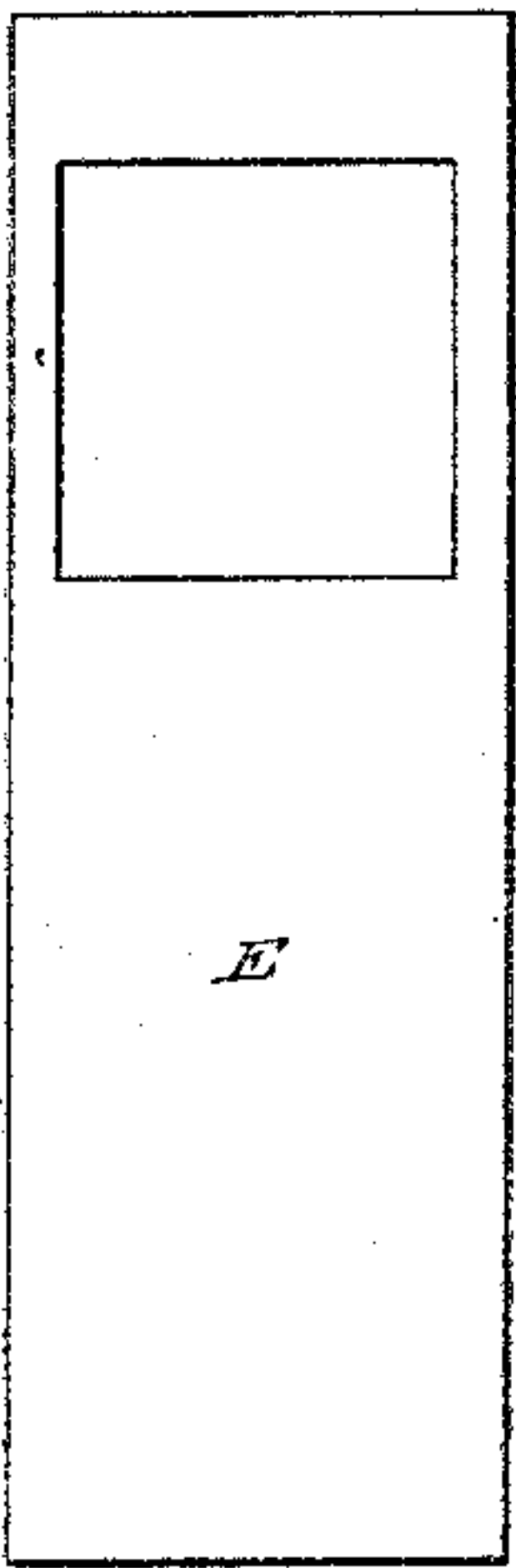


FIG. 3.

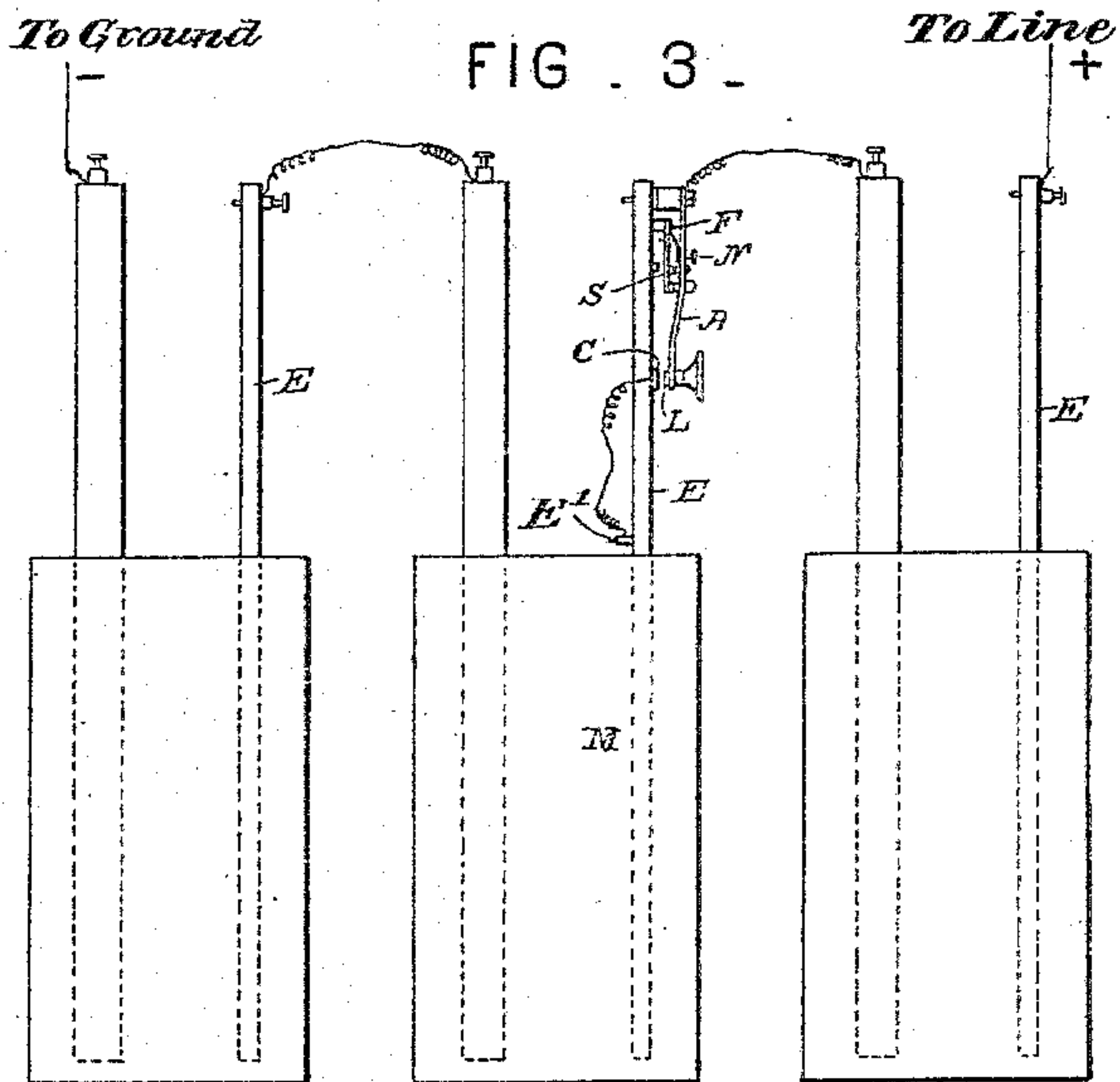


FIG. 4.

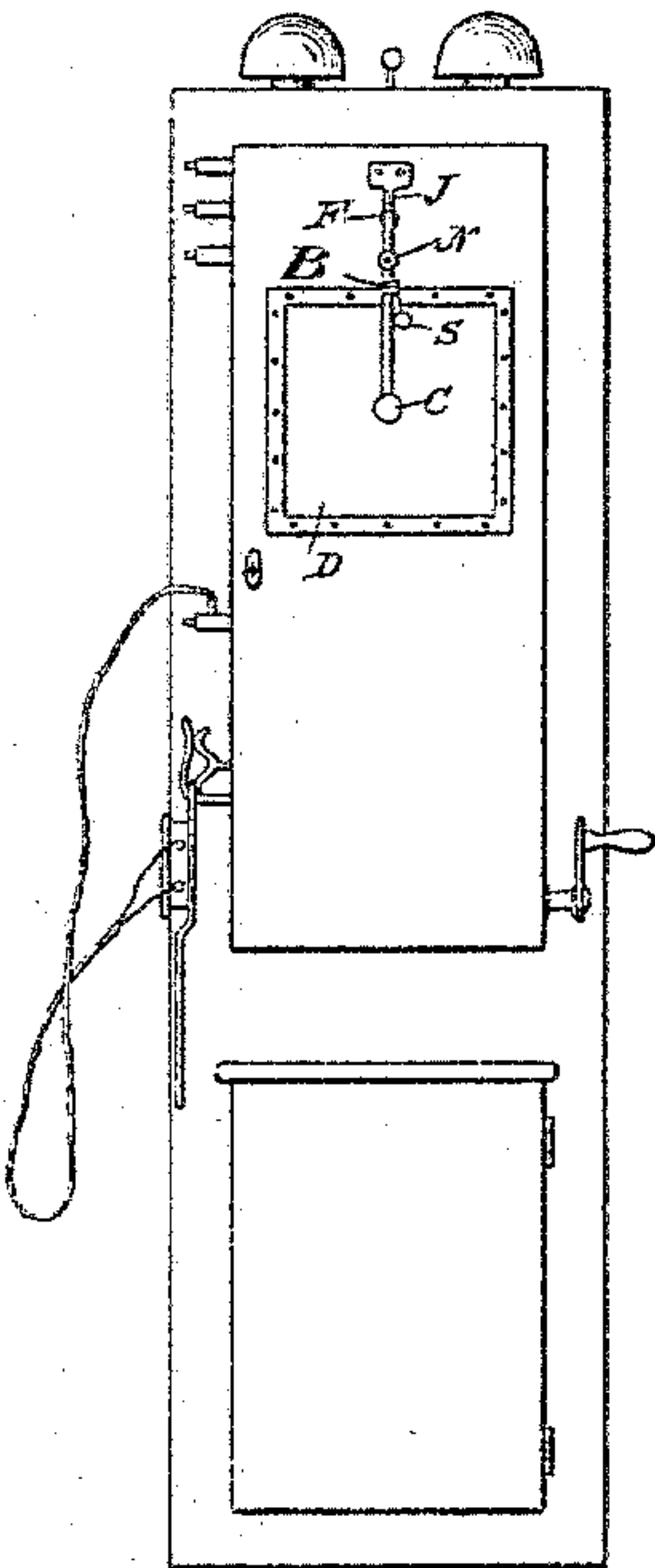


FIG. 5.

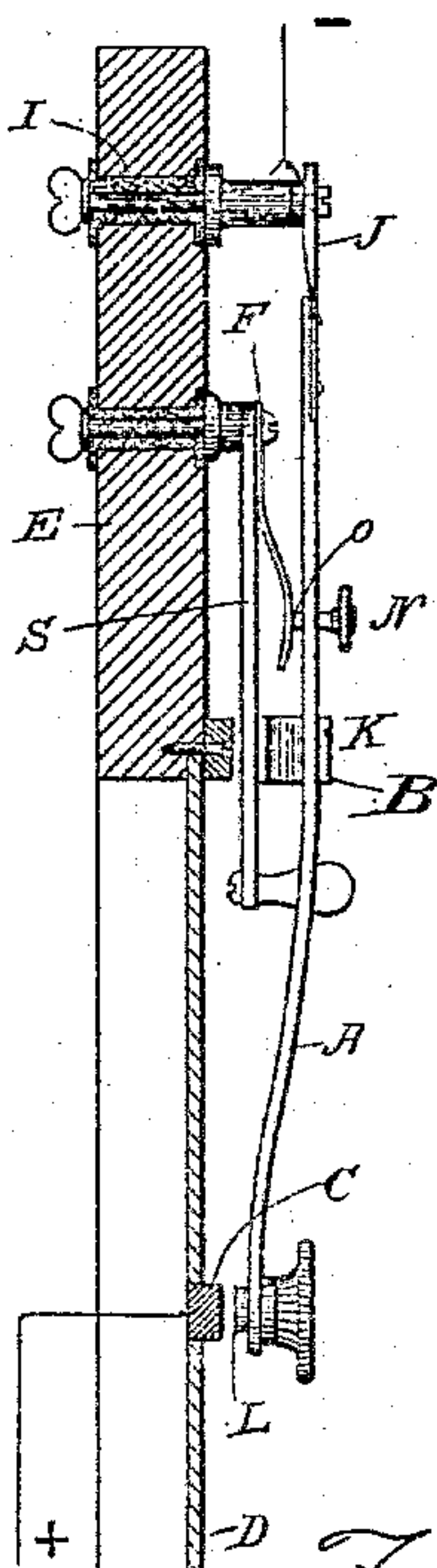
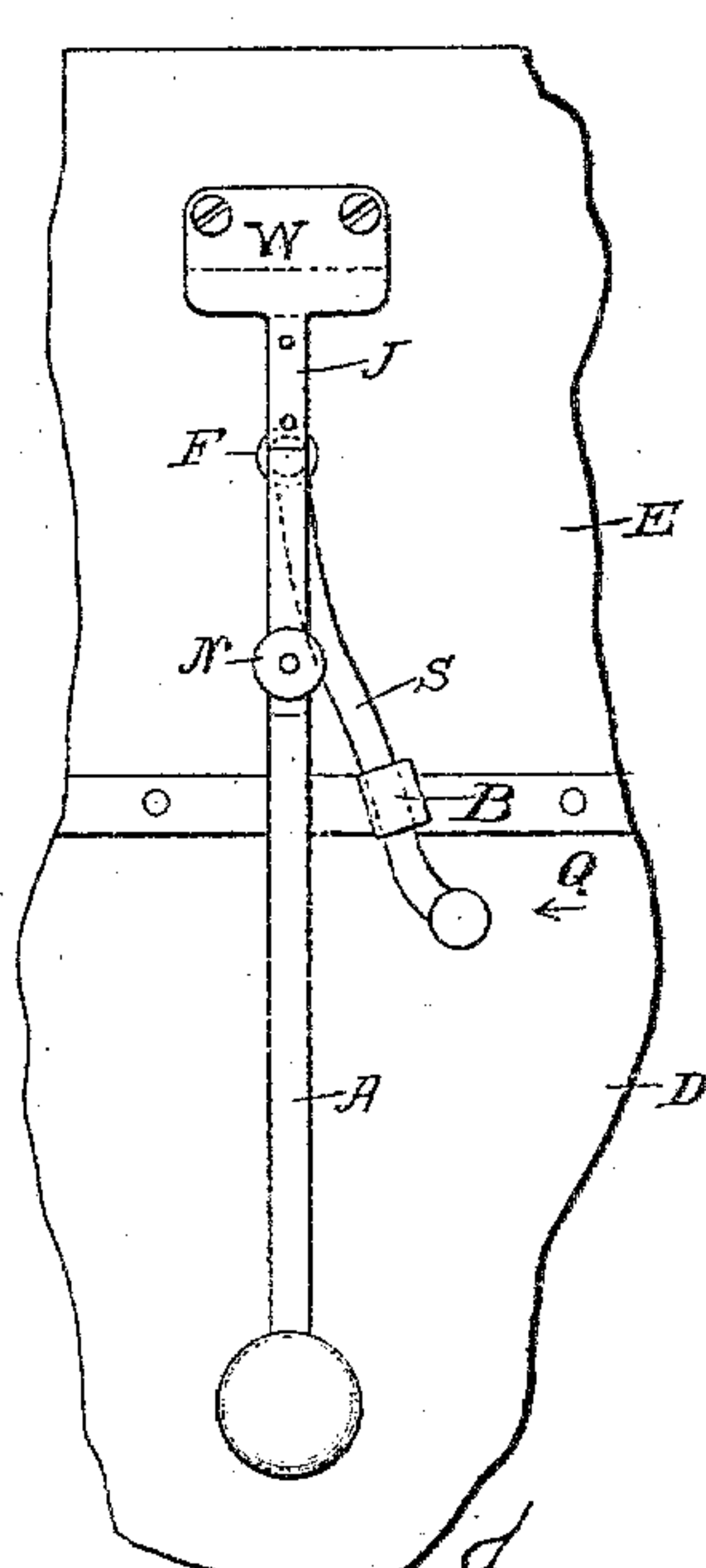


FIG. 6.



Attest:

Geo. T. Smallwood.  
L. C. Curtis.

Inventor:  
Fred. H. Brown  
by James H. Mandeville  
his Attorney.



# UNITED STATES PATENT OFFICE.

FRED. H. BROWN, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS,  
OF ONE-FIFTH TO THE BROWN TELEPHONE AND TELEGRAPH COMPANY,  
OF SAME PLACE.

## TELEGRAPHY AND TELEPHONY.

SPECIFICATION forming part of Letters Patent No. 490,064, dated January 17, 1893.

Application filed February 27, 1891. Serial No. 383,135. (No model.)

*To all whom it may concern:*

Be it known that I, FRED. H. BROWN, of the city of Chicago, in the State of Illinois, United States of America, have invented a Combined Telephone and Telegraph, of which the following specification is a sufficient description.

The object of this invention is to make an instrument which may be used either as a telegraph or telephone, and which can be used on a telegraph circuit for a telephone, with or without the induction coil; and, in fact, which can be used under any of the usual conditions for either telegraphing or telephoning purposes. By the use of this instrument, a person can send in a telegraph circuit either a telegraph or a telephone message. The key can be placed on one of the elements of a series of cells, and a telephonic message can be sent any distance to which the intensity of the circuit will permit. By having a telephone receiver and a telegraph relay in the circuit, either style of message can be sent or received, by using the primary currents alone. This key can be placed upon a telephone board or transmitter-box, with signal or magneto-bells (see Fig. 4,) the induction coil being used in a manner common to all telephones, the secondary current passing over the line wires. This method of construction is recommended for city and suburban use with an induction coil of from one hundred and fifty to three hundred ohms. For telephoning with primary currents, without the aid of the induction coil, it will of course be necessary to add on a greater number of cells, as in telegraphy. I find that when using a larger cell-power, the metallic contact-piece should be slightly increased in area. I find by experiment that aluminum makes a very good contact-piece, and will answer very well in place of platinum, as it does not seem to oxidize much under the electric spark; further, that being a better conductor than platinum, it offers less resistance to the passage of the current. This key and transmitter can be put upon a base as is customary with other telegraph keys, and with a wooden diaphragm placed under its contact-piece, and it then can be used at any point in the circuit. It will then create or interrupt electrical pulsa-

tions in harmony with sound waves of the voice, as it is used with either an induction coil or primary currents, the same as in the state of the art to-day.

In order that my invention may be the better understood, I have illustrated in the accompanying drawings one embodiment thereof, in which drawings—

Figure 1 represents a rear view of a battery element provided with my improvements and Fig. 2 is a face view of the same. Fig. 3 is a general view illustrating the manner of arranging the device for use. Fig. 4 is a view representing a telephone instrument or subscriber's telephone provided with my improvements. Fig. 5 is an enlarged detail of the element seen in Fig. 1 representing the same in vertical section and Fig. 6 is an enlarged rear view of the same.

Fig. 1 shows one of the elements of a battery with the diaphragm D in place. It is preferably made of wood. It is attached to the element in any suitable manner, care being taken that it is left free to vibrate. The contact-piece of carbon (or aluminum, previously dipped in acid to roughen its surface) C, is attached to the center of the diaphragm. This carbon contact is connected underneath by a wire to the element, as shown at E' in Fig. 3. The element E can be cast in the shape shown in Fig. 2, that is, with a square hole left in the top portion, over which is placed a diaphragm.

Fig. 3 shows a series of cells, with a key attached to one of the elements M of one of the cells. The vibrating arm of the key A is attached by a binding-post, or other suitable manner, to the zinc element E, but thoroughly insulated from it, as shown at I in Fig. 5.

Fig. 5 shows a switch S on the top of which is a C shaped piece of metal B, soldered to it. This switch, when moved in direction of the arrow Q, in Fig. 6 pushes the C-shaped metal piece up so as to surround the key-lever, as shown at K in Fig. 5. When in this position the key can be manipulated for telegraphing. The lever of the key impinging against the inside of the top of the C-shaped piece, makes the back stroke of the key. At its downward stroke, the contact of the carbon or the mid-



dle piece C on the diaphragm and the aluminium piece L closes the circuit for a telegraphic impulse.

For telephoning, the switch S with its C-shaped piece is drawn out of contact. The portion of the key, as shown at J in Fig. 5, is made of steel, bronze or other suitable material, in order to act as a spring. By its elasticity, it keeps the piece L in contact with the piece C. The spring F in Fig. 5 is firmly attached to a binding post. Against its upper end at O a set-screw N impinges. This screw adjusts the upward pressure of the spring F in opposition to the downward pressure of the spring J, and it furnishes a ready means of adjusting the pressure of the contact pieces L and C as desired in telephony.

Fig. 6 is a top view of the key and switch. The bronze or steel spring J is made of sufficient width, as shown at W, so that the key-lever A can have no side or lateral motion.

Fig. 4 represents the key of a telephone switch-board with signal bells, battery-box, &c., as is usually made up for city and suburban use.

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

1. The combination with a normally closed electric circuit, of a diaphragm arranged therein, a lever in said circuit having a contact point normally in electrical and mechanical contact with said diaphragm and means, substantially as described, for raising said lever out of contact with said diaphragm whereby a telegraphic message may be transmitted over said circuit, substantially as set forth.

2. The combination with a normally closed electric circuit, of a diaphragm arranged therein, a lever in said circuit having a contact point, a spring for holding said lever normally in electrical and mechanical contact with said diaphragm and means, for raising

said lever out of contact with said diaphragm, whereby a telegraphic message may be transmitted over said circuit, substantially as set forth.

3. The combination with a normally closed electrical circuit, of a diaphragm arranged therein, a lever in said circuit having a contact point, a spring for holding said lever normally in electrical contact with said diaphragm and a switch bar having a spring arranged to bear under said lever, whereby the lever may be lifted out of contact with the diaphragm for the transmission of a telegraphic message, substantially as set forth.

4. The combination with a normally closed electrical circuit, of a diaphragm arranged therein, a lever in said circuit having a contact point, a spring for holding said lever normally in electrical contact with said diaphragm, and a switchbar pivoted and moving in a path under said lever and provided with a guide plate to take over and a spring to take under said lever, substantially as set forth.

5. The combination with a normally closed electrical circuit, of a diaphragm arranged therein, a lever in said circuit having a contact point, a spring for holding said lever normally in electrical contact with said diaphragm, a switchbar pivoted and moving in a path under said lever, a guide plate on said switchbar arranged to take over said lever, a spring on said switchbar adapted to take under said lever and an adjusting screw for varying the tension of said spring, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRED. H. BROWN.

Witnesses:

JAMES H. MANDEVILLE,  
F. E. STEBBINS.