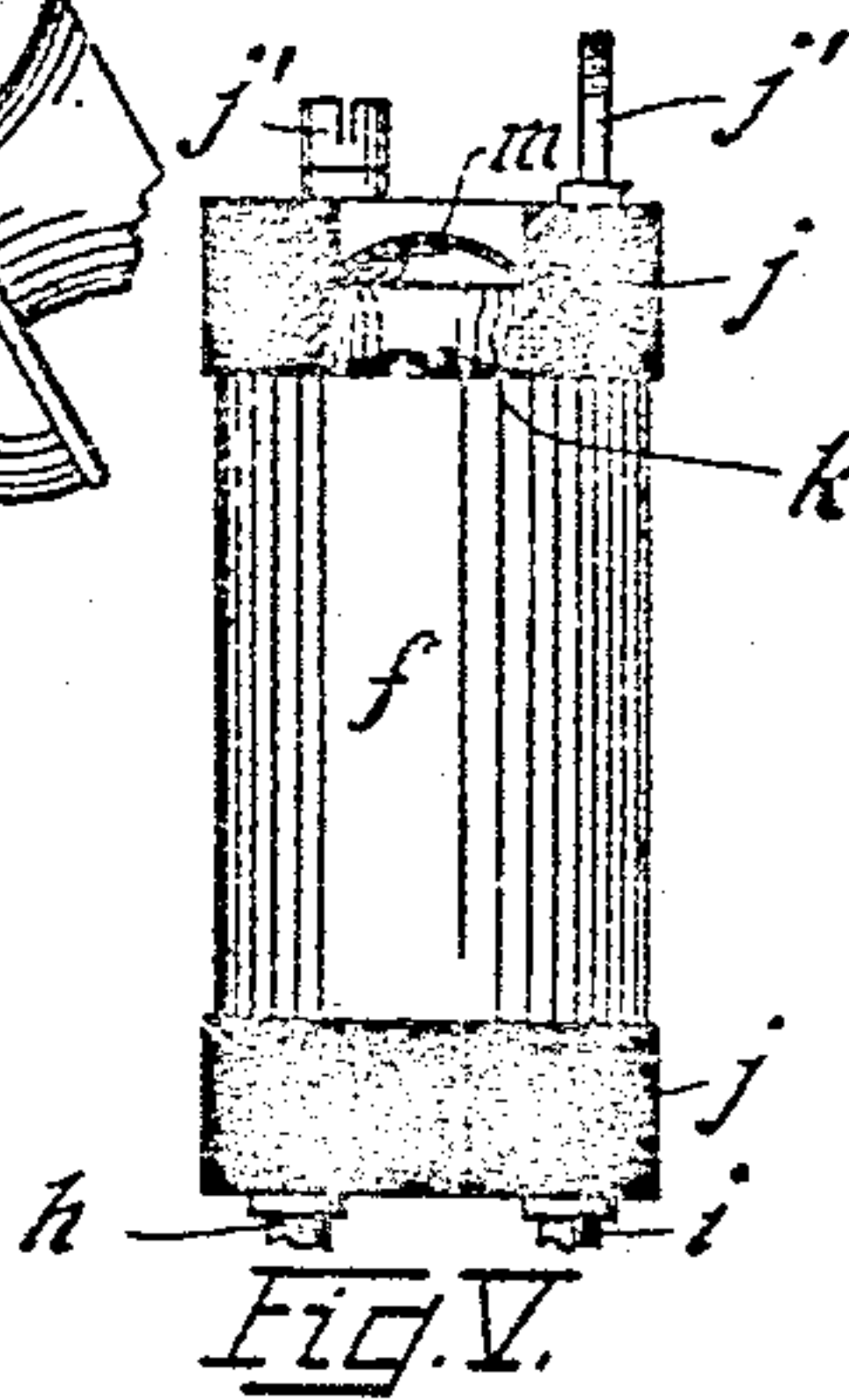
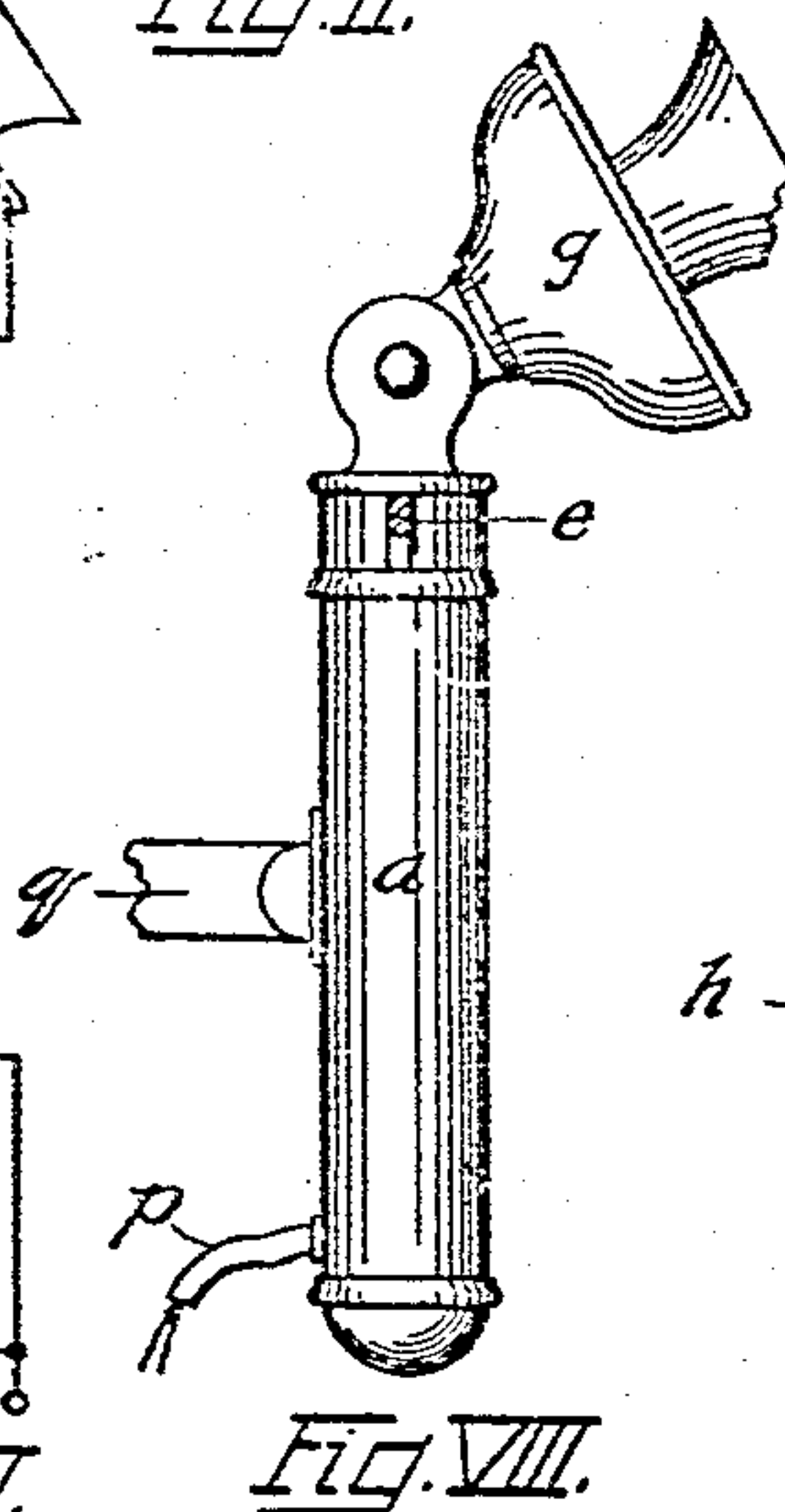
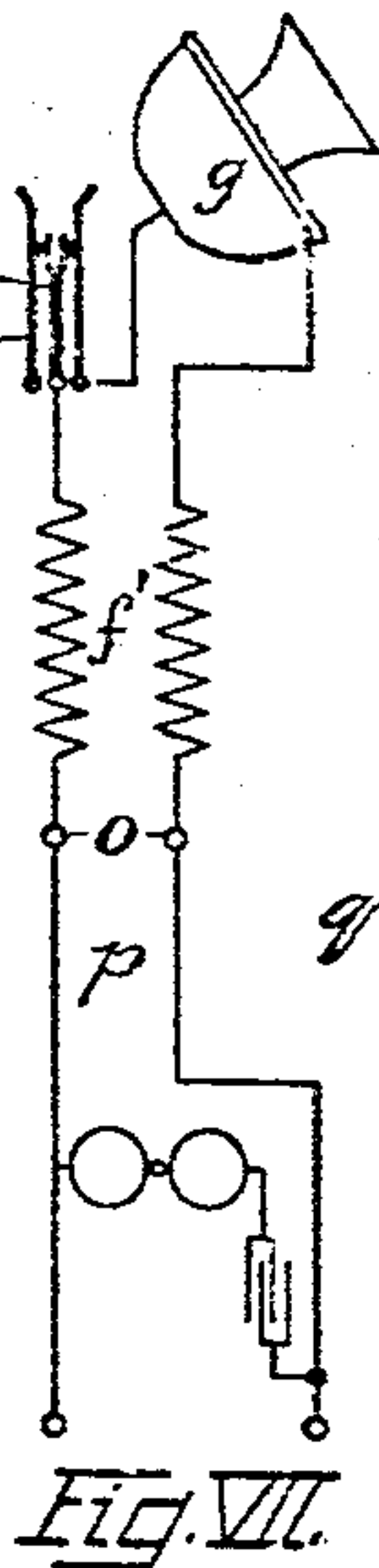
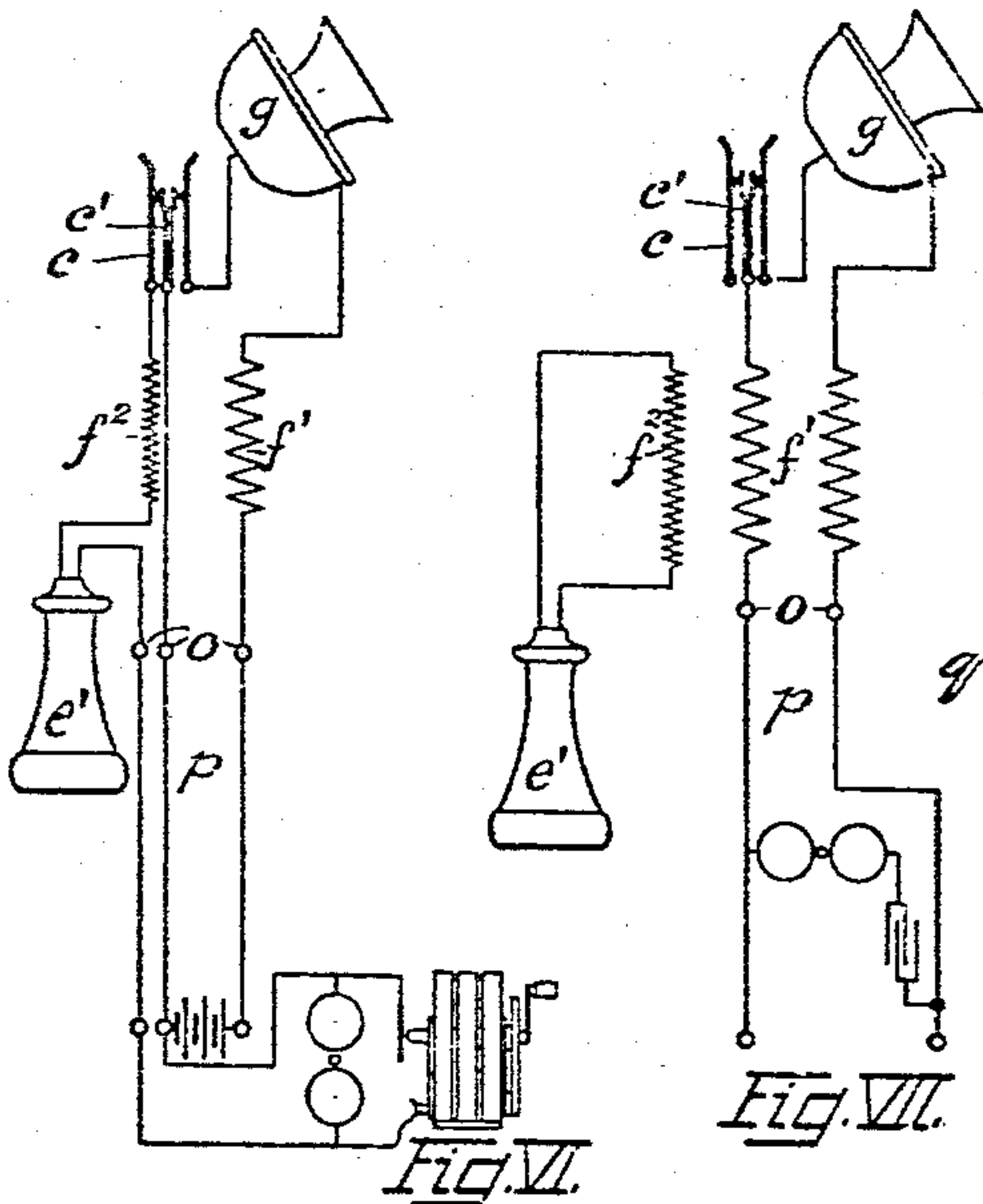
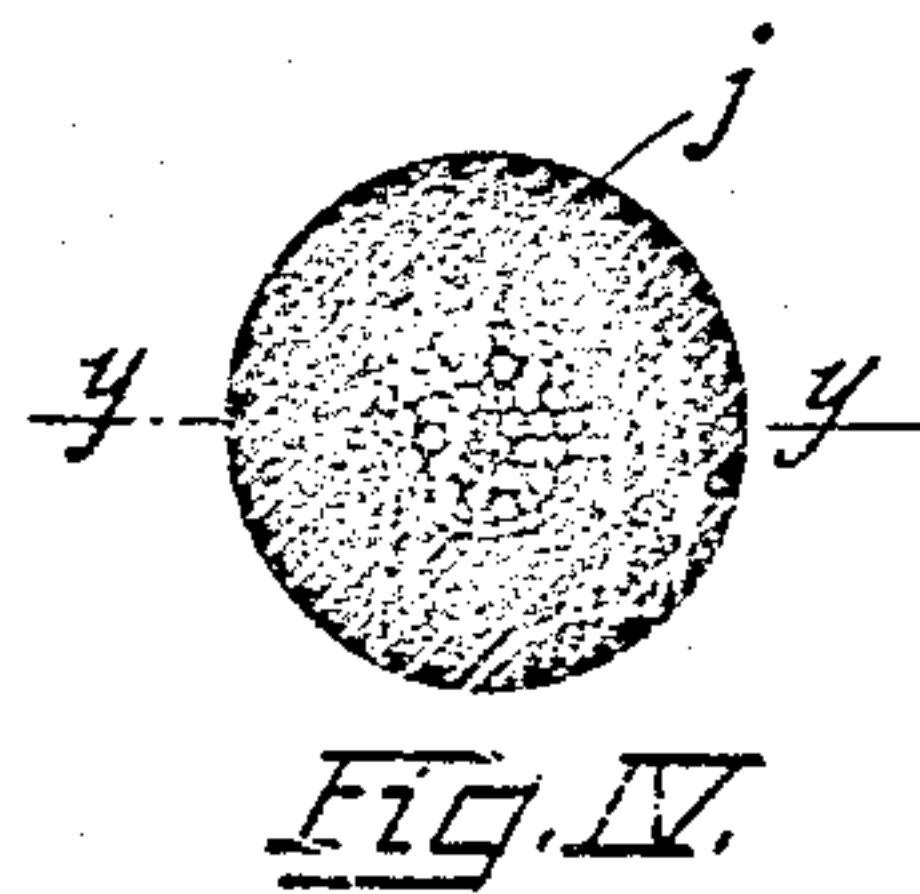
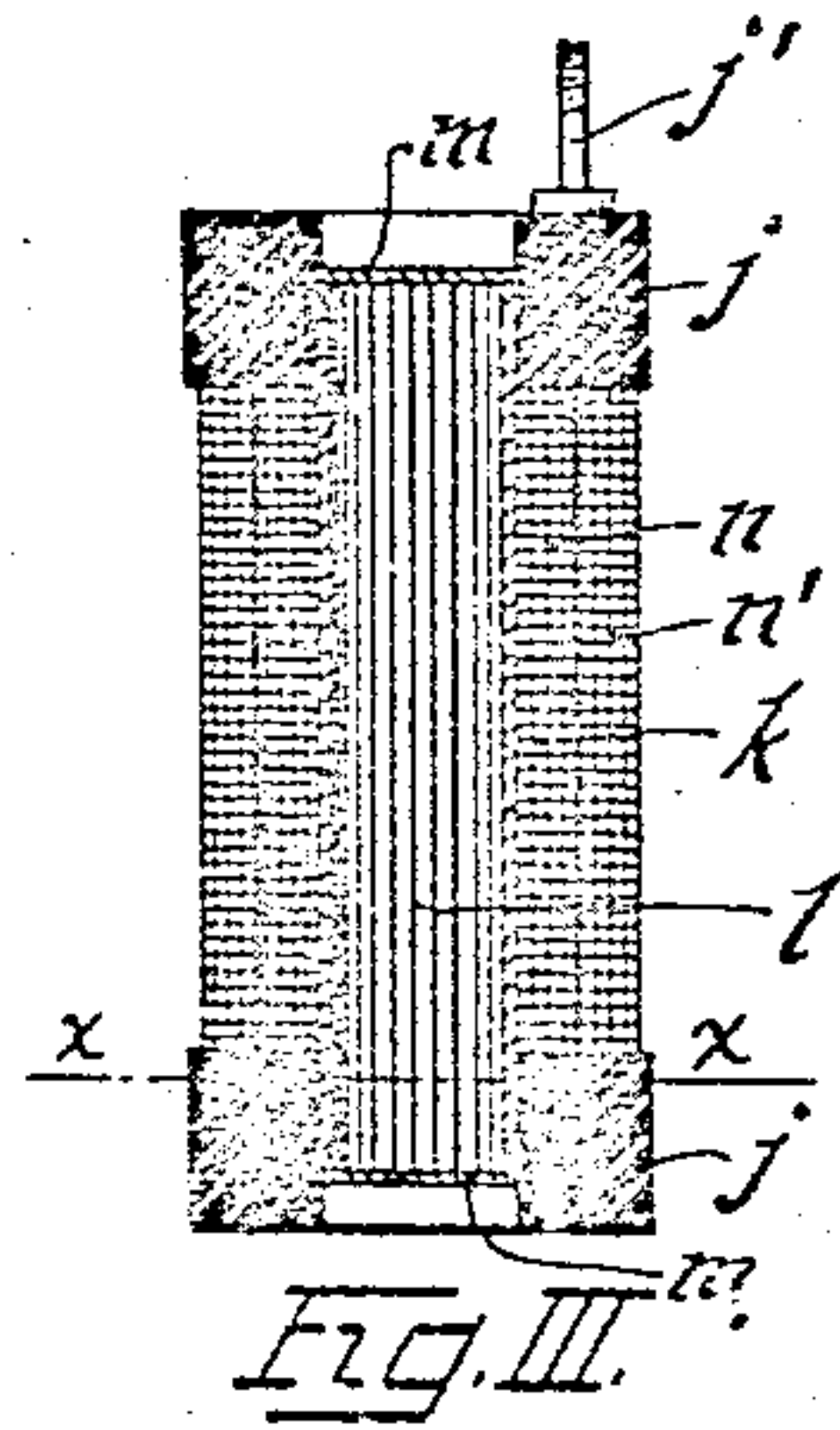
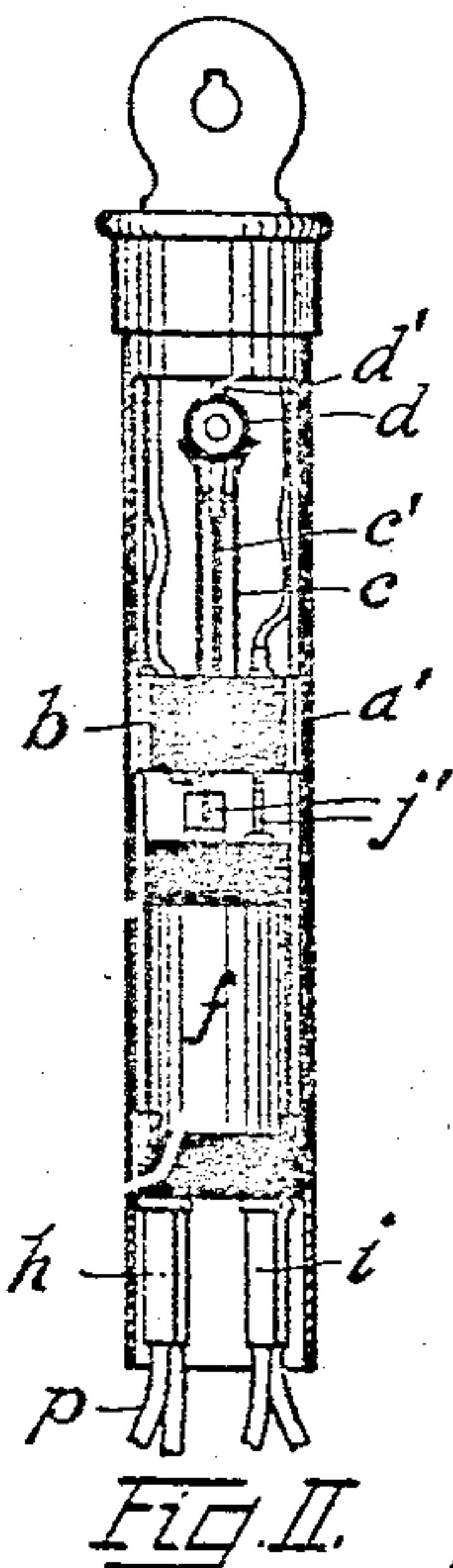
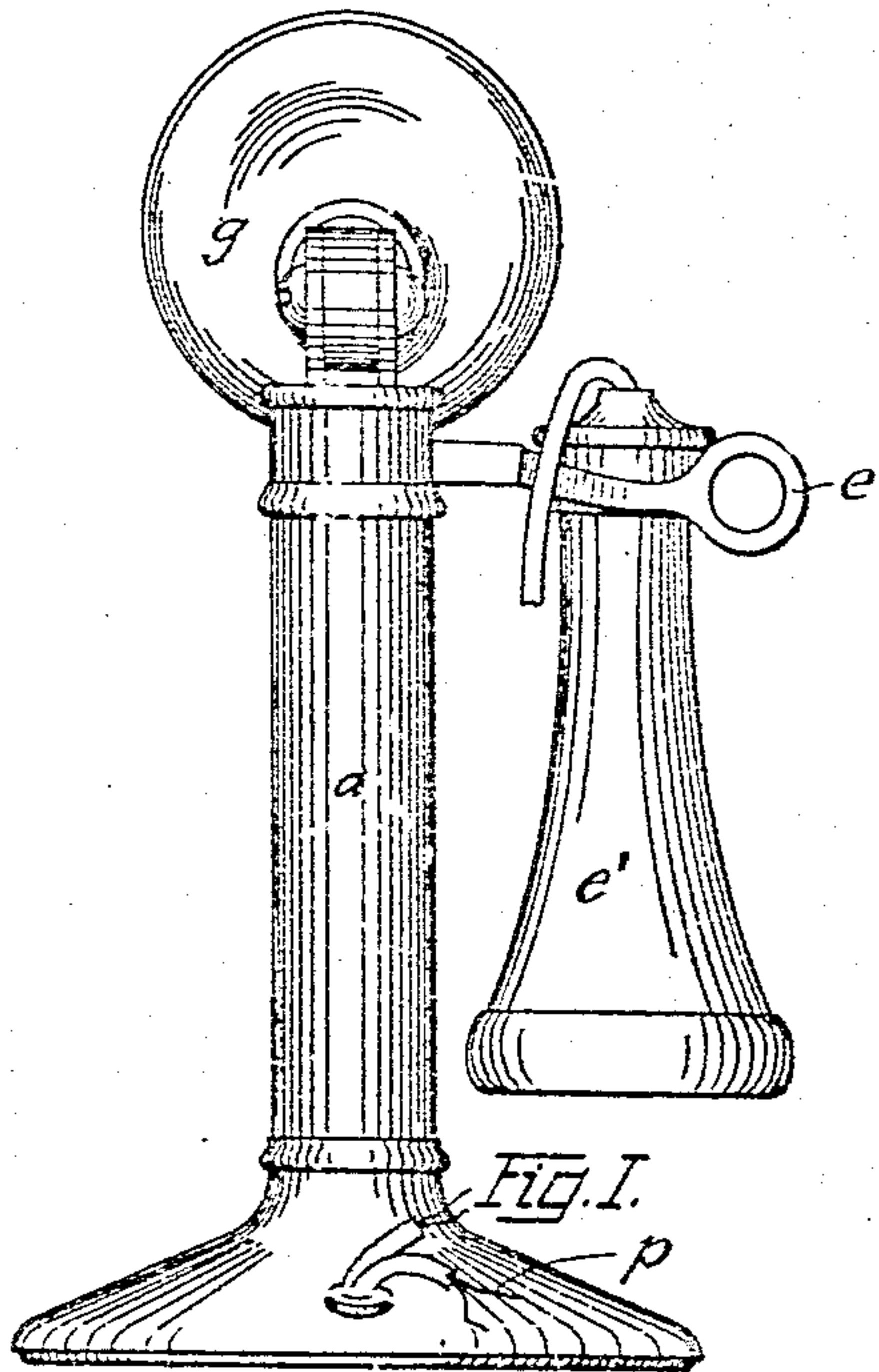


B. W. SWEET.
TELEPHONE DESK SET APPARATUS AND CIRCUIT.
APPLICATION FILED APR. 27, 1906.

978,958.

Patented Dec. 20, 1910.



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UNITED STATES PATENT OFFICE.

BURTON W. SWEET, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CENTURY TELEPHONE CONSTRUCTION COMPANY, OF BUFFALO, NEW YORK, A CORPORATION OF NEW YORK.

TELEPHONE DESK-SET APPARATUS AND CIRCUIT.

978,958.

Specification of Letters Patent.

Patented Dec. 20, 1910.

Application filed April 27, 1906. Serial No. 313,930.

To all whom it may concern.

Be it known that I, BURTON W. SWEET, a citizen of the United States of America, and a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Telephone Desk-Set Apparatus and Circuits, of which the following is a specification.

My invention relates to improvements in telephone desk-set apparatus and circuits, and has for its object, the improvement of this class of apparatus in such manner as to make it more compact and better adapted for ordinary service.

In this class of apparatus, it is highly desirable that the construction shall be as compact and light in weight as it is possible to make serviceable and satisfactory instruments, for the reason that telephone desk-sets are intended to be placed immediately beside the user, and most frequently are held by him in the talking position. Consequently, a large unwieldy or heavy instrument is out of the question. Moreover, by reason of the fact that the receiver and transmitter are carried from the top of the standard, a desk-set demands a construction which is relatively low, and ordinarily is provided with a shallow flattened base, to the end that the instrument shall not be top-heavy or easily overturned. Practically all of these attributes are also required of such desk-set instruments as are intended to be mounted at the end of a supporting arm. Again, in desk-set instruments, a very frequent source of trouble is found in the flexible conducting cords extending the telephone circuits to the instrument, and I have sought to minimize this trouble by reducing the number of such cords carried to the instrument, and proportionally obviating such trouble. This, I have accomplished by means of a specially constructed induction coil, which I mount within the lower portion of the tubular standard of the desk-set, and being contained within the instrument and intimately associated with the circuit-changing springs thereof, serves to reduce the number of conducting cords otherwise required for completing the necessary electrical circuits, and insuring more permanent connections, both

interiorly and exteriorly of the telephone instrument.

My said improvements will be more readily understood by making reference to the accompanying sheet of drawings, setting forth apparatus embodying my invention, wherein:—

Figure I. is a view in rear elevation of a telephone desk-set. Fig. II. is a side view of the inner tubular standard, partially broken away. Fig. III. is a vertical section, and Fig. IV. a transverse section of the induction coil, respectively on lines $y-y$ and $x-x$. Fig. V. is a view in elevation of the same device, broken away at the top (the three latter views being upon a considerably enlarged scale.) Figs. VI. and VII. respectively are diagrams showing the circuits of local and common battery desk-sets equipped with my invention; and, Fig. VIII. is a view in elevation of a compact self-contained desk-set, carried at the end of a pivoted supporting-arm.

Throughout the several figures of the drawings, I have employed the same character of reference to indicate similar parts.

The telephone desk-sets or instruments, Figs. I and VIII, are provided with outer tubular sleeves or uprights a removably supporting the standards a' mounting as a unitary structure the telephonic and switching apparatus of said instruments. In the first named instrument, said upright is mounted upon a low flat base, while in the second type, it is carried at the end of a bracket arm.

Referring to Fig. II., it will be seen that the inner tubular standard a' of the desk-set, carries a central block b of insulating material, wherein the short vertically-positioned switch springs c c' are mounted. These are adapted to be actuated into and out of contact, by means of the insulating sleeve d , vertically moved by a plunger d' , which is connected with the switch-hook e , provided normally to support the receiver e' . Beneath the block b , through which the terminals of the switch-springs extend, is provided an induction-coil f of compact construction, and fitting closely within the tubular standard. At the upper end of said coil, are permanent connections or terminals j' respectively extending to the inner contact springs, and to

the transmitter g , as indicated in the diagram, Fig. VII. The primary f' of the induction-coil, in this instance, is divided into two parts, while the secondary f^2 is only inductively associated therewith, and connected in permanently closed short circuit with the receiver. The lower portion of the induction-coil carries the paired terminals h i , which respectively lead to the primary and secondary windings of said coil.

Owing to the constant jar to which an instrument of this character is subjected in being picked up and dropped back upon the desk or support, it has been found that a specially constructed induction-coil is very desirable, if not necessary, for this purpose. This coil is formed of two insulating heads j , j' , suitably bored to receive a tube k , which is interiorly flanged or expanded at its ends to enter the fiber insulation. A bundle of iron wire l is then placed in the tube, and small dished metal caps m are inserted at either end, as indicated in the upper part of Fig. V, and then flattened down upon the tube and its contained wire core, thus expanding the disks to engage the fiber insulating heads and firmly hold the parts together. The windings n n' of the coil are then put on in the usual manner, and the proper circuit terminals are mounted in the fiber heads at either end. This construction affords a very simple, cheap and compact induction-coil for use in such association as herein set forth.

In the diagram indicating the desk-set circuits, o o indicate the terminals from which the flexible conducting-cord p extends to connect the instrument with the external circuit. In a common battery instrument, such as set forth in Figs. II and VII., for example, a single two-strand conducting-cord is required, as opposed to three or more strands needed with an instrument associated with an external induction-coil. In a local battery instrument, such as delineated in Fig. VI., a three-strand conducting-cord is used, as opposed to four or more strands otherwise required where my invention is not employed.

In Fig. VIII., I have shown the extremity of a bracket-arm q , serving to mount a telephone desk-set of my invention, which employs the contained induction-coil, and consequently requires only a two or three strand conducting-cord, as the case may be, to connect the instrument in circuit.

From the foregoing, it will be readily appreciated, that my improvements permit of mounting the necessary induction-coil directly within the tubular standard and in near association with the switch-springs thereof, whereby an extremely compact instrument is secured, as is emphasized by the structures of Figs. II and VIII. It will be seen that were the attempt made to mount

the induction-coil in the base of the instrument, it would be necessary to increase the height thereof very materially, thereby adding to the size and cumbersome appearance of the instrument and raising the center of gravity thereof, which in turn would demand a very material increase in the weight provided in the base. Consequently, by employing very short switch-springs and actuating mechanism, and positioning the induction-coil within the bore of the standard, immediately adjacent thereto, I am enabled to produce a self-contained instrument of ordinarily small size, which requires no additional conductors in the flexible conducting-cord to maintain circuit with the telephone line and associated apparatus. Of course, where no supporting base is provided, as in Fig. VIII., there would be no possibility of utilizing such part for containing the induction-coil and cord and coil-terminals. My improvements, however, permit of a self-contained instrument of this type, as well, without adding a cumbersome containing-part, or increasing its weight.

Having now described apparatus embodying my invention, I claim, and desire to secure by Letters Patent, the following;—

1. The combination with a tubular standard mounting the cooperating elements as a substantially unitary structure, comprising a telephone transmitter mounted thereon, a telephone-hook, switch mechanism actuated thereby, a telephone receiver normally hung upon the hook, an induction-coil electrically connected with said receiver and mounted within the tubular standard, whereby all of said parts are united in removable relation, and a supporting-base adapted removably to mount the standard, substantially as set forth.

2. In a telephone instrument, the combination with a tubular standard mounting the cooperating elements as a substantially unitary structure, comprising a telephone transmitter and receiver supported thereby, a switch-lever pivoted to said standard, switch-springs positioned in the upper part of said standard, and adapted to be actuated by the lever, and an induction-coil positioned within the standard beneath the switch-springs, terminals provided thereon connecting respectively with the external circuit and directly with the switch-springs, and a separable supporting member for said tubular standard, substantially as set forth.

3. In a telephone desk-instrument, the combination with a suitably-supported tubular standard mounting the cooperating elements as a substantially unitary structure, comprising a transmitter and receiver carried from the upper portion thereof, a switch-lever pivoted within the said standard, relatively short switch-springs positioned within the standard adjacent to the

switch-lever and actuated thereby, and an induction-coil disposed within the standard and permanently connected with the switch-springs, the transmitter and receiver, terminals provided upon the induction-coil maintaining said connections and the connections with the external circuit, and a separable supporting member for said tubular standard, substantially as set forth.

4. The combination with a telephone desk-instrument having a tubular standard mounting the cooperating elements as a substantially unitary structure, comprising an induction-coil vertically positioned within the standard, comprising insulating-heads, a flanged tubular core-member engaging said heads, a soft iron core disposed therein, disks at either end of said core expanded to engage such insulating-heads, and primary and secondary windings of insulated wire disposed upon the core, and a switch and switch-actuating mechanism mounted upon the standard adjacent to the coil and electrically connected therewith, substantially as set forth.

5. In a telephone desk-instrument, the combination with suitable supporting means, of an upright or standard forming a self-contained instrument removable therefrom, comprising a transmitter and receiver mounted thereon, a pivoted switch-lever, short vertically-positioned switch-springs controlled by said lever, an induction-coil disposed within the standard, permanent connections uniting the respective windings of the coil with the transmitter, receiver and switch-springs, and terminals provided upon said coil for maintaining connection with the exterior circuit, whereby the number of required flexible cord-conductors is reduced, substantially as set forth.

6. In a telephone instrument of the class described, the combination with a suitably-supported tubular standard mounting the cooperating elements as a substantially unitary structure, comprising a transmitter and receiver normally supported from the upper end thereof, a switch-lever, short vertically-positioned switch-springs within the standard mounted to be actuated by said lever, an induction-coil vertically positioned within the standard adjacent to the switch-springs having insulating-heads, terminals mounted upon said heads respectively in permanent connection with the switch-springs, transmitter and receiver and with the external circuit, whereby a self-contained instrument requiring a small number of flexible cord-conductors is obtained, and a separable supporting member for said tubular standard, substantially as set forth.

7. In a telephone desk-set, the combination with a tubular standard-member, of a transmitter and switch-hook supported thereon, switch-springs insulatingly mounted within the upper portion of said standard, an induction coil disposed within the standard beneath said switch-springs and directly connected thereto, terminals upon the coil for establishing such connections, cord-conductors extending within the tubular standard to the induction-coil and a base removably supporting the standard, substantially as set forth.

Signed at Cleveland, this 25th day of April, A. D. 1906, in the presence of the undersigned witnesses.

BURTON W. SWEET. [L. s.]

Witnesses:

JOHN F. McDONNELL,

ALBERT LYNN LAWRENCE.