

No. 837,470.

PATENTED DEC. 4, 1906.

S. C. HOUGHTON & F. M. POTTER, JR.

HAND TELEPHONE.

APPLICATION FILED OCT. 5, 1905.

2 SHEETS—SHEET 1.

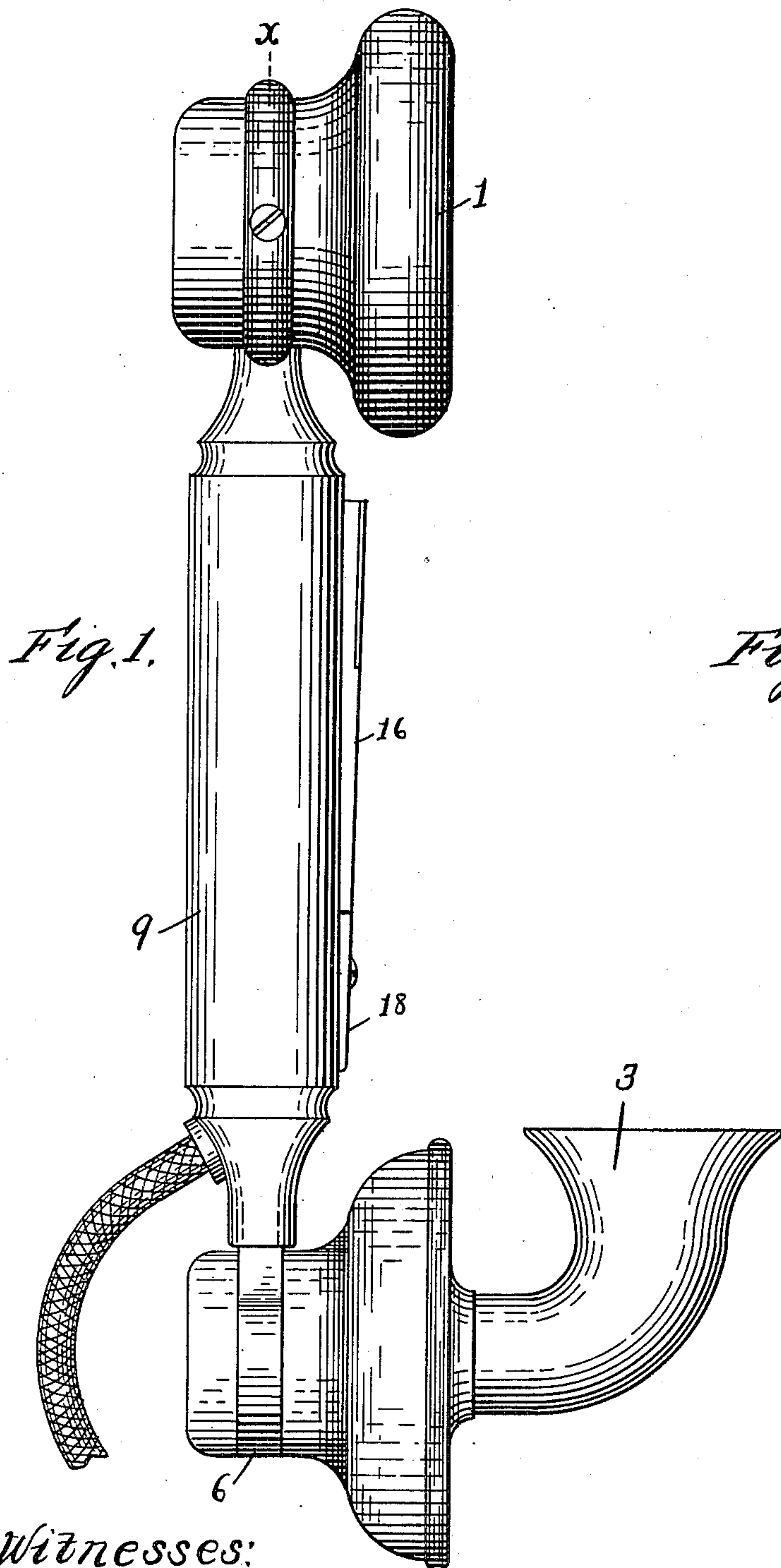
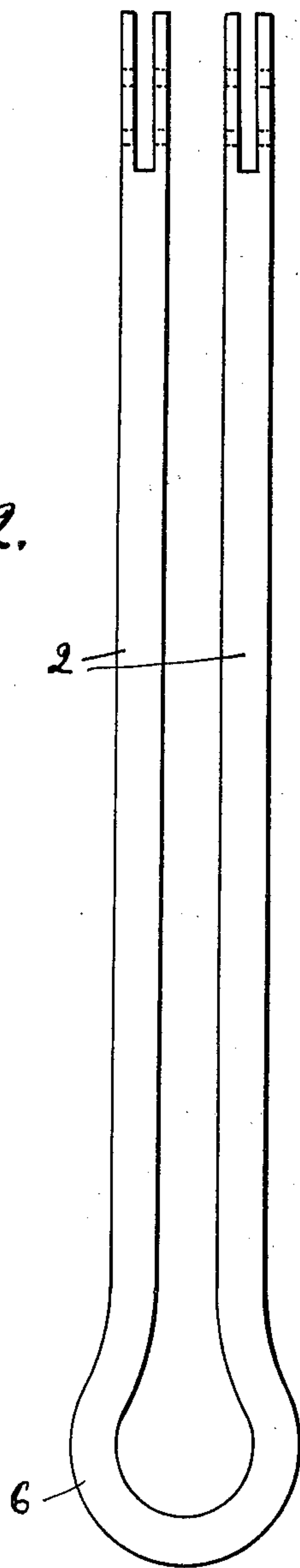


Fig. 2.



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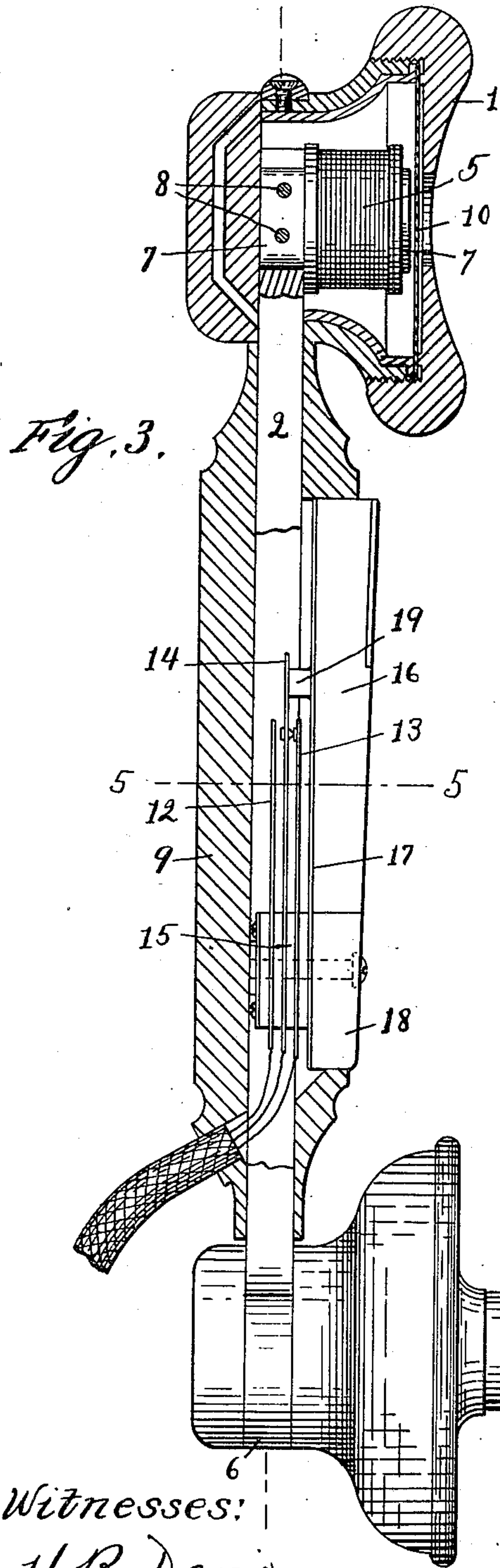


Fig. 3.

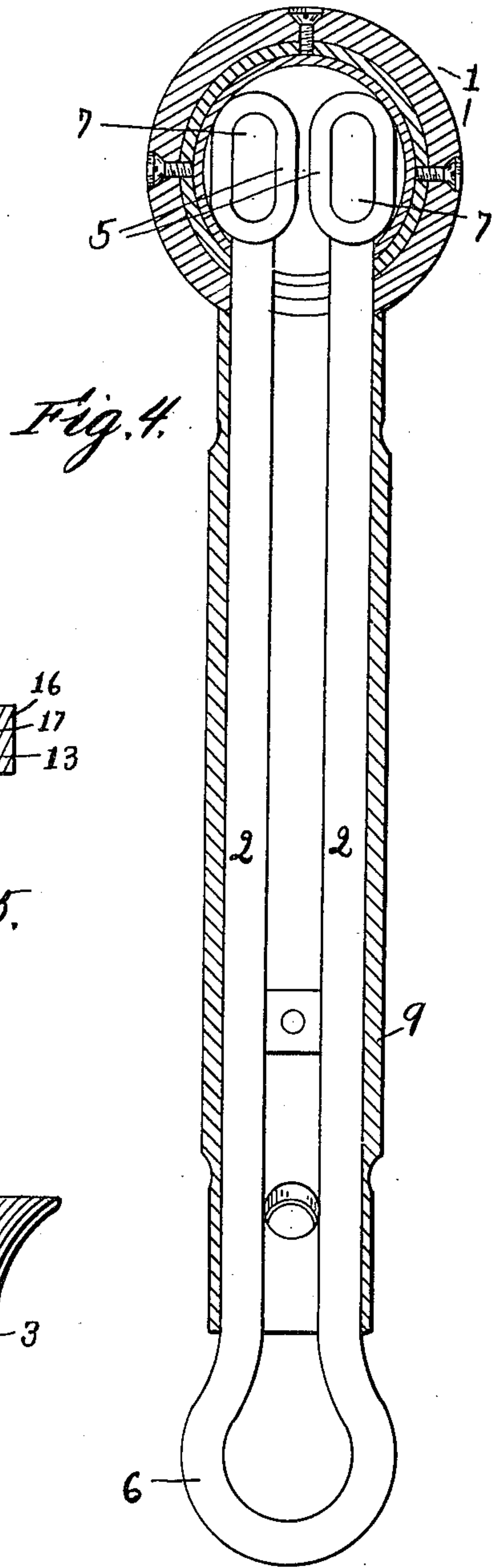


Fig. 4.

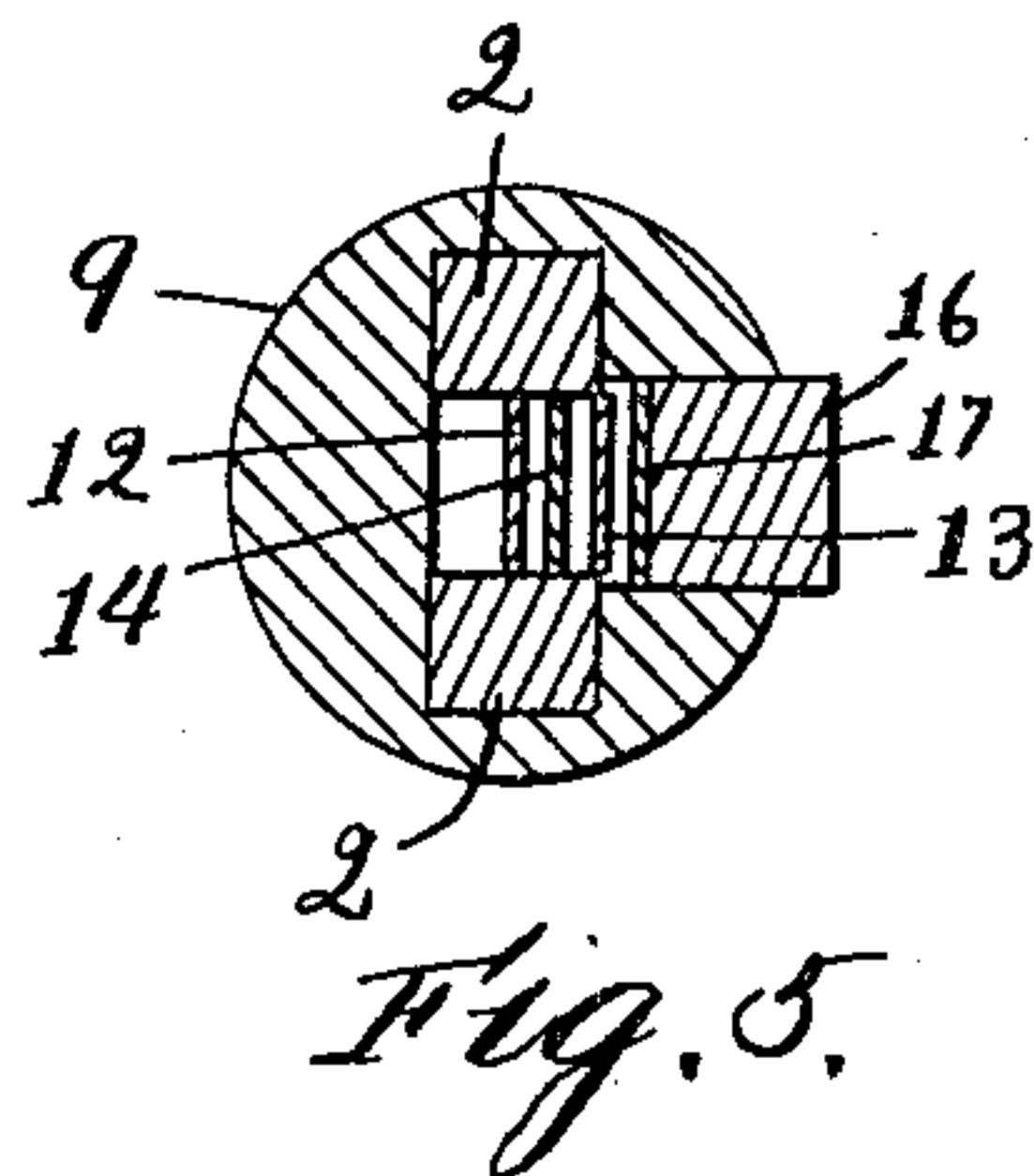


Fig. 5.

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UNITED STATES PATENT OFFICE.

STEPHEN C. HOUGHTON AND FRANK M. POTTER, JR., OF SYRACUSE, NEW YORK, ASSIGNORS TO THE WIRE AND TELEPHONE COMPANY OF AMERICA, A CORPORATION OF NEW YORK.

HAND-TELEPHONE.

No. 837,470.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed October 5, 1905. Serial No. 281,381.

To all whom it may concern:

Be it known that we, STEPHEN C. HOUGHTON and FRANK M. POTTER, Jr., of Syracuse, county of Onondaga, State of New York, have invented an Improvement in Hand-Telephones, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

10 This invention relates to hand-telephones, comprising a transmitter and a receiver connected together by a suitable handpiece and so disposed relative to each other as to be properly held in front of the mouth and ear
15 of the user.

This invention has for its object to provide a permanent magnet of the horseshoe type for the receiver which is so constructed as to be contained within a handpiece or to serve
20 as the handpiece and to support the receiver at its upper end and the transmitter at its lower end, such form of permanent magnet being very powerful, hence increasing the efficiency of the receiver, and being so constructed as to be contained within or to
25 serve as the handpiece, or, in other words, having a hand-engaging portion between its ends, may be made of extraordinary dimensions; also, to provide the receiver with
30 a permanent magnet of the horseshoe type of extraordinary dimensions the arms of which are extended upward and the extremities thereof project into the shell or case of the receiver and are connected to
35 rearwardly-extended cores of the electromagnets which are located back of the diaphragm; also, to provide a switch for the bell-circuit and talking-circuit, which is contained within the handpiece, its actuating
40 member being operated by a suitable operating device supported by the handpiece, which is accessible so as to be engaged by the thumb or finger of the user when grasping the handpiece.

45 Figure 1 shows in side elevation a hand-telephone embodying our invention. Fig. 2 is a detail of the permanent magnet of the receiver removed. Fig. 3 is a vertical section of the hand-telephone shown in Fig. 1.
50 Fig. 4 is a vertical section of the hand-telephone shown in Fig. 1, taken on the dotted line *x*, the transmitter and the switch for the bell and talking circuits, together with its

operating device, being omitted. Fig. 5 is a cross-section of the handpiece and switch, taken on the dotted line 5 5, Fig. 3.

1 represents the receiver of any desirable form, size, and construction comprising a shell or case containing a diaphragm 10 and a pair of electromagnets 5, which are secured
60 to and project at right angles from the poles or extremities of the arms of a permanent magnet 2. The permanent magnet 2 is of the horseshoe type and is constructed to occupy the same plane from end to end and
65 comprises a pair of arms of any suitable length, herein shown as disposed in parallelism, and a circularly-formed heel or crown the inside diameter of which is greater than the distance between the arms. The perma-
70 nent magnet 2 is arranged with its arms extended upward, and the extremities of said arms or the poles of the magnet are herein designated the "upper end" thereof and the heel or crown is herein designated the "lower
75 end" thereof. The permanent horseshoe-magnet 2 is made long enough to serve as a handpiece for the telephone and supports the receiver at the extremities of its arms or upper
80 end and supports the transmitter at its heel or crown or lower end. The extremities of the arms of the permanent magnet 2 are bifurcated, as shown in Fig. 2. The cores
85 7 of the electromagnets 5 of the receiver are extended rearwardly into engagement with the shell or case thereof, and the bifurcated ends of the arms of the permanent magnet project through a hole in the side of said shell or case and embrace said cores 7 and are secured to said cores by a pin or pins 8. The
90 circularly-formed heel or crown 6 of the permanent magnet embraces the shell or case of the transmitter 3, and thereby rigidly supports said transmitter.

The transmitter is made of any suitable
95 form, size, and construction, although for convenience in supporting it by the circularly-formed heel of the permanent magnet its shell or case is made cylindrical. That portion of the permanent magnet 2 between
100 the receiver and transmitter serves as and constitutes the hand-engaging portion, and said hand-engaging portion is preferably inclosed within a cylindrical shell or case 9 of any suitable design, adapted to be grasped
105 by the hand of the user, although it is ob-

vious that this cylindrical shell or case may be omitted and the arms of the permanent magnet directly grasped by the hand of the user. The cylindrical shell or case, however, is preferable, as it also serves as a support for a switch for controlling the bell and talking circuits and for the operating device for said switch.

The switch herein shown comprises two long slender pens 12 13, each bearing a contact-point near one end and separated a short distance apart, and another long slender pen 14, placed between them, bearing upon each side of its contact-points, and all of said pens are more or less elastic and are attached, at one end only, to a supporting-block 15. The several contact-points are borne by the free ends of the pens and the middle pen is made longer than the others and serves as the actuating member for the switch, being moved into engagement with either one of the other pens, according to whether the bell-circuit or the talking-circuit is to be included. The middle pen or actuating member 14 has a normal tendency by its inherent spring action to engage the pen 13, and thus to include the bell-circuit; but when disengaged therefrom and moved into engagement with the pen 12 the bell-circuit will be excluded and the talking-circuit included.

An operating device is provided for the switch, which is conveniently arranged on the handpiece, so as to be engaged by the thumb or finger of the user and operated to exclude the bell-circuit and include the talking-circuit. The operating device herein shown consists of a finger 16, loosely fitting a slot formed in the side of the cylindrical case 9 and extending lengthwise thereof. The finger is connected by a flat spring 17 to a block 18, fixed to the cylindrical case, said spring serving as a pivotal support for the finger, and the tendency of said spring is to throw the finger outward. The finger has a projection 19 on its inner side or face, which is secured thereto by means passing through

the fixed part of the spring 17 and which when the finger is pressed inward is adapted to engage the actuating member 14 and move said actuating member out of engagement with the pen 13 and into engagement with the pen 12. The finger is arranged with its uppermost end free, so as to be engaged by the thumb or finger of the user to be conveniently pressed inward whenever the handpiece is grasped.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a hand-telephone, a telephone-receiver containing a pair of electromagnets, a permanent horseshoe-magnet for the receiver, arranged with its arms extended upward, to the extremities of which the cores of said electromagnets are attached, said magnet being made long enough to provide a hand-engaging portion between its poles and heel, and a telephone-transmitter, conveniently located with respect to said receiver, which is engaged and held by the heel of said magnet, substantially as described.

2. A horseshoe-magnet disposed with its arms extended upward and having a circularly-formed heel, and made long enough to provide a hand-engaging portion between its poles and heel, a telephone-receiver containing a pair of electromagnets, the cores of which are attached to the poles of said magnet, and a telephone-transmitter conveniently located with respect to said receiver having a circularly-formed case substantially fitting the circularly-formed heel of said magnet, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

STEPHEN C. HOUGHTON.
FRANK M. POTTER, JR.

Witnesses:

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