

(No Model.)

J. E. KEELYN.
TELEPHONE INSTRUMENT.

No. 581,350.

Patented Apr. 27, 1897.

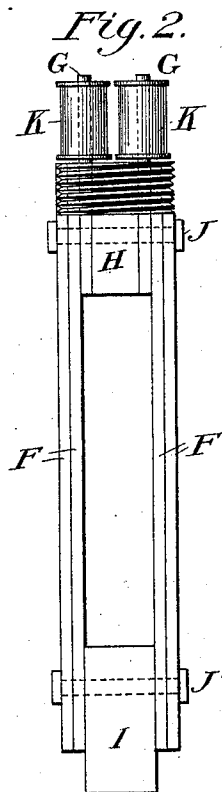
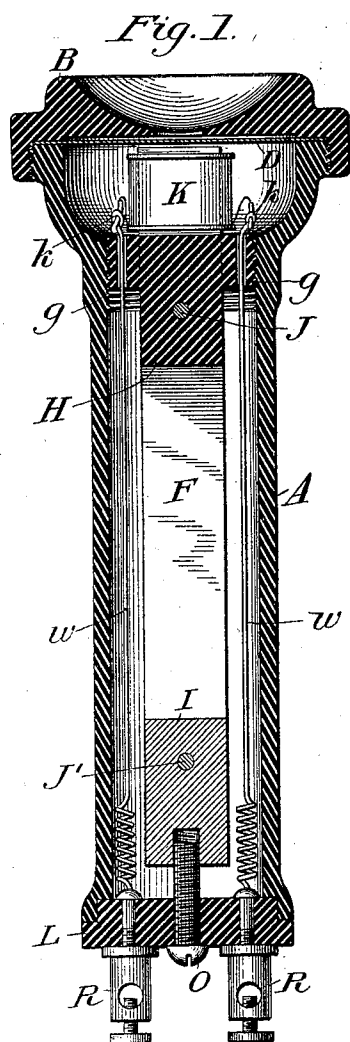
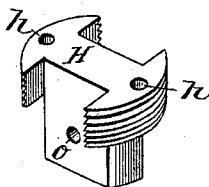


Fig. 3.



Witnesses.
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TELEPHONE INSTRUMENT.

SPECIFICATION forming part of Letters Patent No. 581,350, dated April 27, 1897.

Application filed January 5, 1897. Serial No. 618,090. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. KEELYN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Telephone Instruments, of which the following is a specification.

The object of my invention is to produce a telephone instrument of few and simple parts which will be efficient and durable and at the same time possess means whereby the magnets may be readily adjusted toward and from the diaphragm.

For a detailed description of my invention reference is made to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a sectional view of a complete instrument. Fig. 2 is a side elevation of the bar-magnets and coils, and Fig. 3 is a perspective view of an adjustment-block.

Like letters refer to the same parts throughout the drawings and specification.

A is the outer shell, and B the mouthpiece. These two parts screw together and clamp the diaphragm D between them in the ordinary manner.

F F are bar-magnets arranged, preferably, in pairs. These pairs are held apart at one end by the block H of hard rubber or other suitable non-magnetic material and at the other end by the block I of soft iron. On each side of the block H and between it and the pairs of bar-magnets are the soft-iron pole-pieces or cores G G. The bar-magnets F F, blocks H and I, and the pole-pieces are all firmly clamped together by the screws J J'. The screw J passes through the hole o in the block H, both pole-pieces G, and through the bar-magnets F F. This screw is of brass or any other suitable non-magnetic material to prevent the short-circuiting of the magnetic lines. The screw J', at the other end of the magnets, is preferably of iron.

The segmental block H, which is substantially of the form shown in Fig. 3, is screw-threaded on its largest circumference, so as to engage a thread g on the inner surface of the shell A.

On the pole-pieces G are slipped the coils K K, which are securely clamped in place by any suitable means. A tailpiece L, of hard

rubber or other suitable material, is so shouldered as to fit in the end of the receiver-shell. Lugs on the inner periphery of the receiver shell and corresponding depression on the tailpiece serve to keep the latter from turning in its place.

A screw O, extending through the tailpiece and engaging in a tapped hole in the block I, serves to clamp the magnets firmly in any position to which they have been adjusted and also to hold the tailpiece in place. When it is desired to adjust the magnets to a position closer to or farther from the diaphragm, the screw O is taken out and the bar-magnets turned in one direction or the other. This turns the block H in the screw-threaded portion of the shell A, thus moving the magnets longitudinally with respect to the shell. The screw O is then replaced and the entire mechanism is firmly bound together.

To the binding-posts R R on the tailpiece are soldered heavy leading-in wires w w. These run each through a hole h and are firmly knotted, as at k, to prevent their being withdrawn through the block. The fine wires with which the magnets are wound are then soldered to the ends of the heavy leading-in wires, thus rendering the connections complete. The knotting of the leading-in wires prevents any strain ever coming on the small magnet-wires when the tailpiece is removed. Sufficient slack is left in the leading-in wires to allow the removal of the tailpiece a short distance to give access to the end of the magnets for purposes of adjustment.

It is found that in receiving instruments of the ordinary type much trouble is experienced in keeping the adjustment permanent. This is due to the fact that the magnet is rigidly secured to the receiver-shell at a point at a considerable distance from the diaphragm. As steel and hard rubber differ very widely as to their coefficients of expansion under change of temperature, it follows that with every change of temperature the distance between the diaphragm and the pole-pieces is altered, owing to the unequal expansion or contraction of steel and hard rubber. A sudden change in temperature will thus often make an instrument inoperative. By my improvement this trouble is almost entirely obviated, as the point at which

the magnets are secured to the shell is so close to the diaphragm that the difference in expansion between the hard rubber and the steel cannot be noticed.

5 I do not desire to limit myself to the use of a compound bar-magnet nor to the exact specific construction herein shown and described; but

10 What I claim as new, and desire to secure by Letters Patent, is—

1. In a telephone instrument, a magnet carrying a coil at one end, a disk screw-threaded on its outer surface rigidly mounted on said magnet, and an outer shell carrying a diaphragm and having on its inner surface a screw-thread into which said threaded disk fits, whereby the magnet may be adjusted longitudinally toward or from the diaphragm by turning it in the shell, and means where-
20 by the magnet may be clamped into any desired position, substantially as described.

2. In a telephone instrument, a bar-magnet carrying a coil at one end, a disk screw-threaded on its outer surface and rigidly
25 mounted on said magnet in proximity to said coil, an outer shell having on its inner surface a screw-thread into which said threaded disk fits, a tailpiece and a screw passing through said tailpiece and engaging the end of the
30 bar-magnet, thus serving to bind the tailpiece, the bar-magnet and the outer shell rigidly together, substantially as described.

3. In a telephone-receiver, an outer shell and an ear-piece, carrying a diaphragm be-
35 tween them, a bar-magnet carrying a coil at one end, a circular disk screw-threaded on its

outer surface and mounted on said magnet, a screw-thread on the inner surface of said outer shell at the end near the diaphragm, into which the screw-threaded circular disk
40 fits, a tailpiece carrying binding-posts and leading-in wires, and a screw passing through said tailpiece and engaging the end of the bar-magnet, thereby binding the magnets in any position to which they have been ad-
45 justed and at the same time holding the tailpiece in place, substantially as described.

4. In a telephone-receiver, an outer shell and an ear-piece, a diaphragm clamped be-
50 tween them, two laminated bar-magnets, a screw-threaded adjustment-block of hard rubber or like material clamped between the ends of said bar-magnets nearest the diaphragm, a block of soft iron clamped between the other ends of said bar-magnets, a screw-
55 thread on the inner surface of said outer shell into which said adjustment-block fits, soft-iron pole-pieces, each carrying a bobbin clamped on each side of the adjustment-block and between it and the magnet-bars, a
60 tailpiece shouldered to fit in the end of the outer shell, and a screw passing through said tailpiece, and engaging a tapped hole in said block of soft iron, thus serving to clamp the magnets in any desired position and at the
65 same time secure the tailpiece firmly in place, substantially as described.

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Witnesses:

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