

(No Model.)

R. S. BARNUM.
TELEPHONE RECEIVER.

No. 574,654.

Patented Jan. 5, 1897.

Fig. 1.

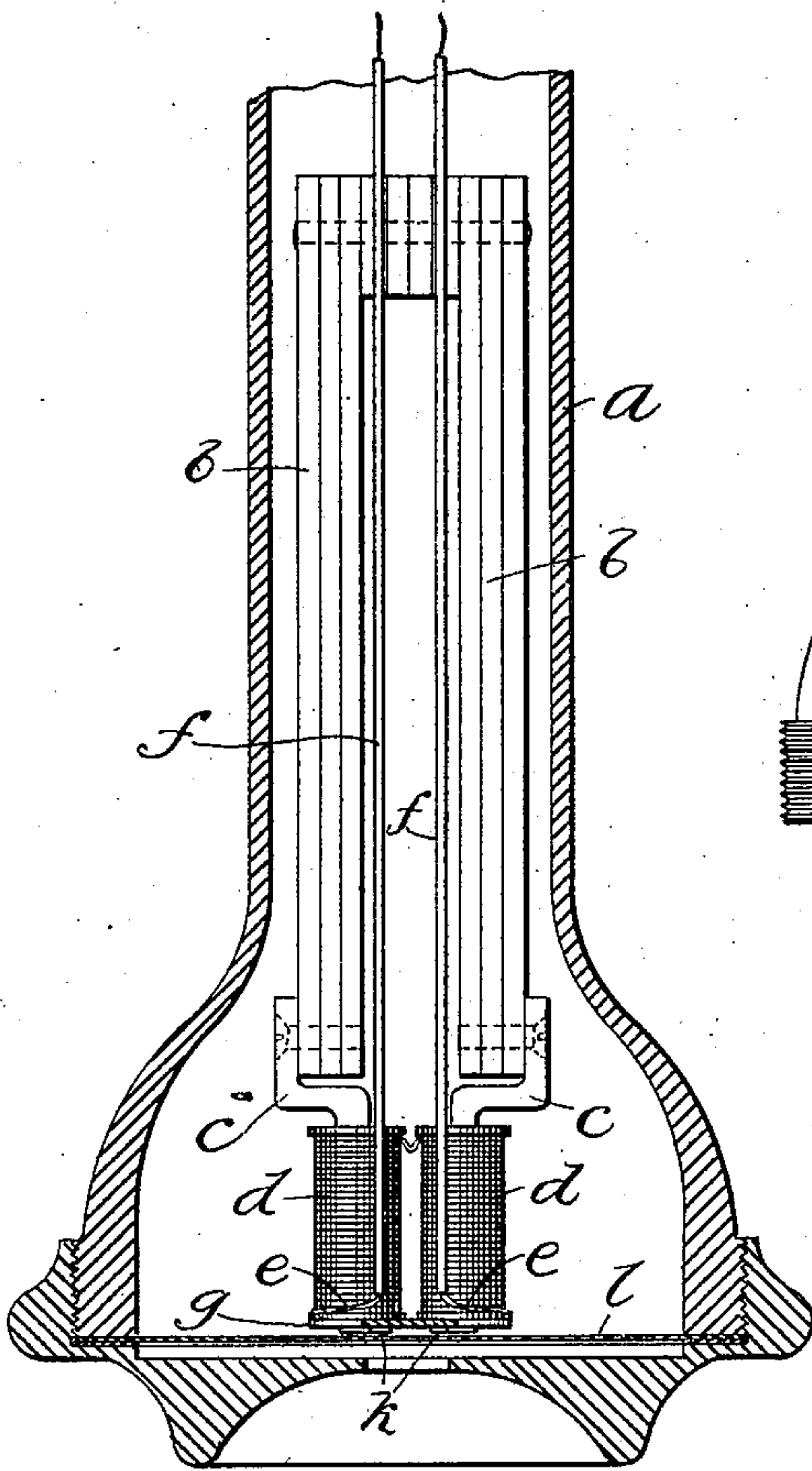


Fig. 3.

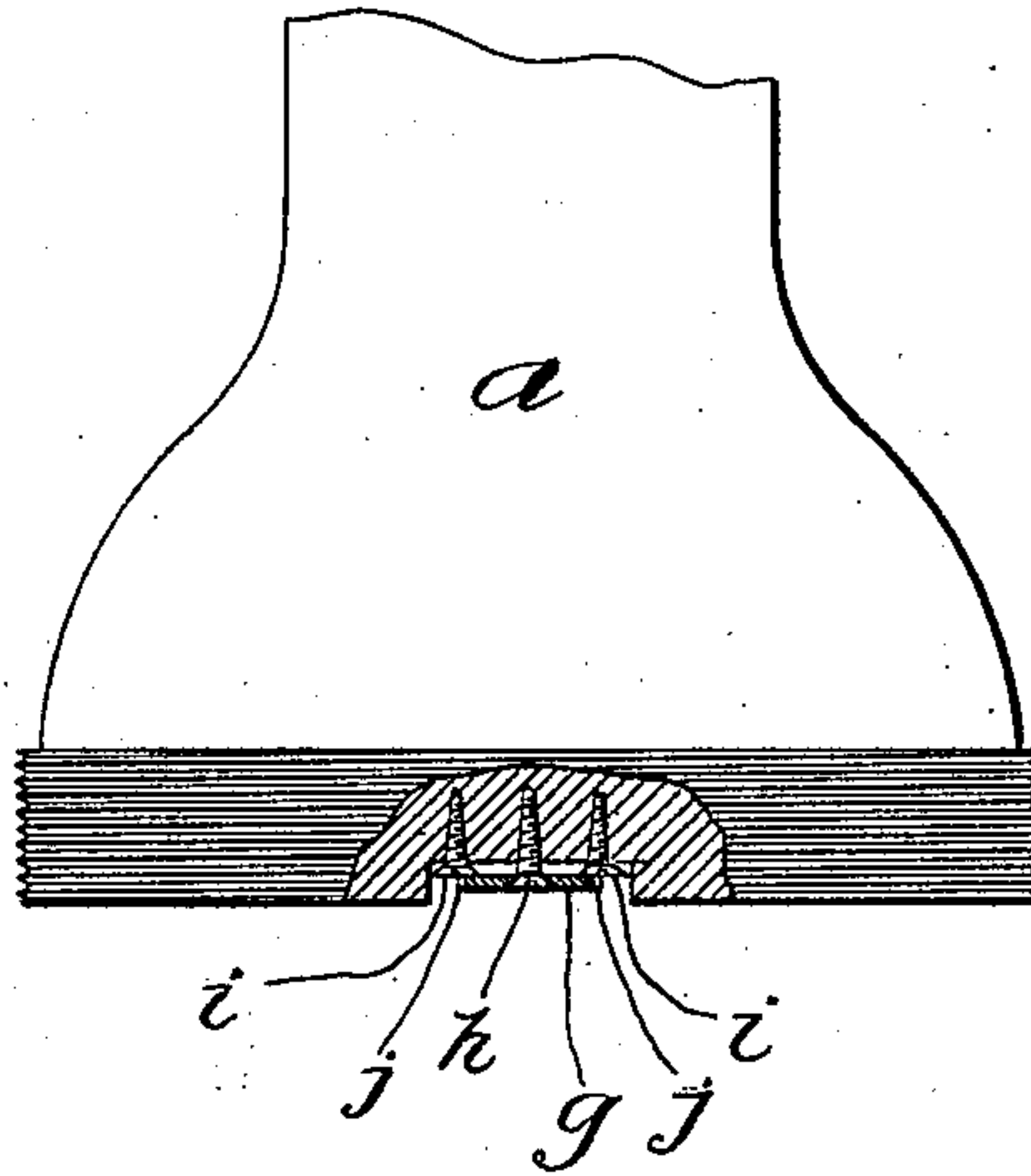


Fig. 4.

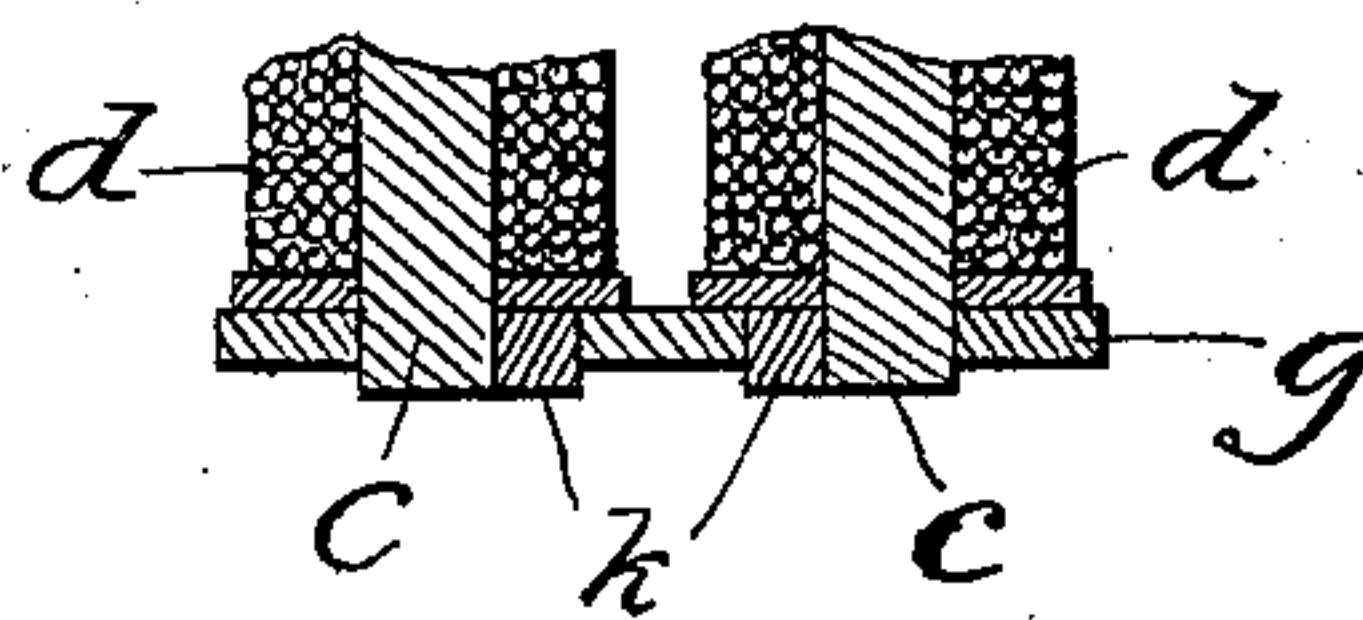
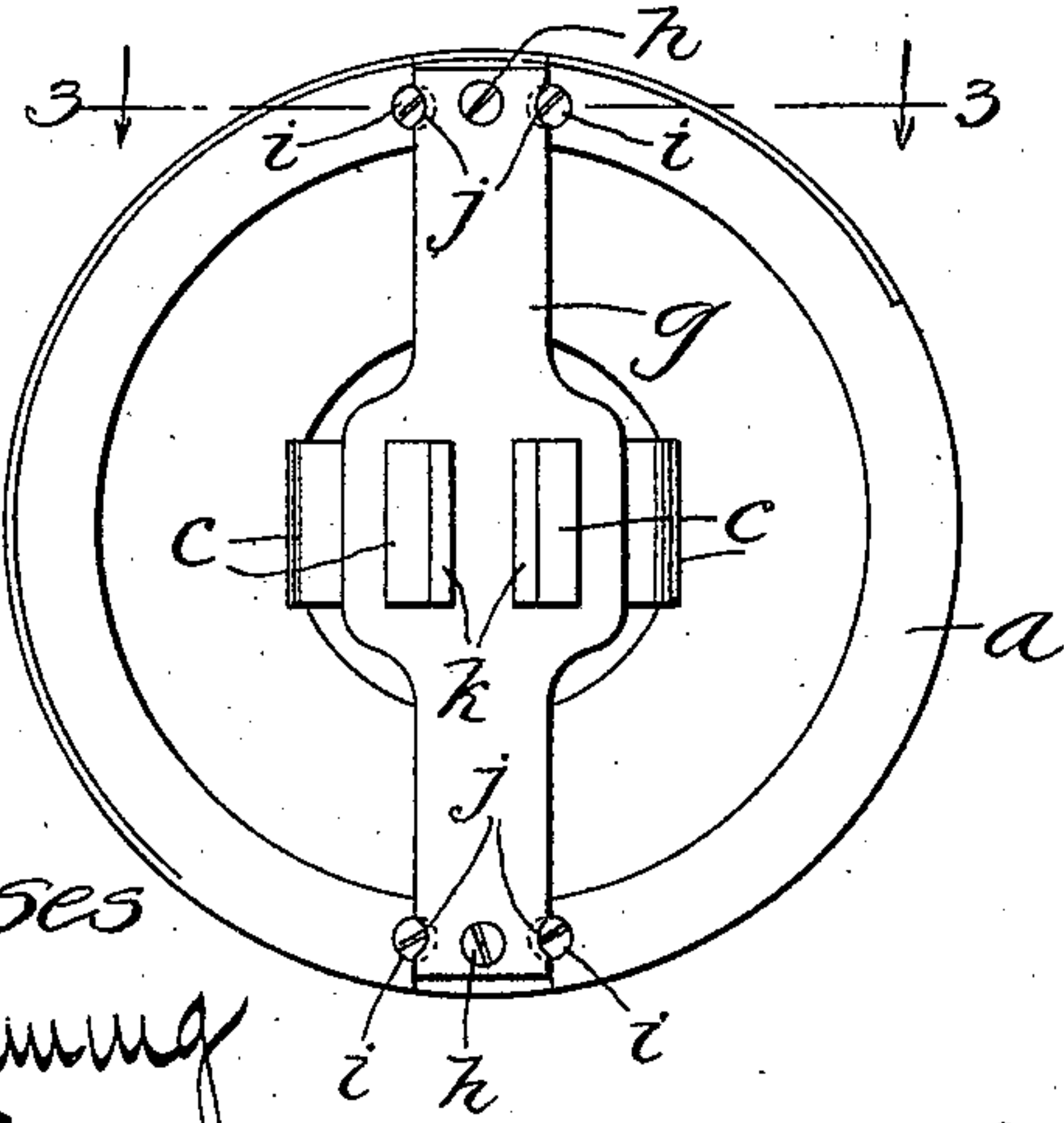


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

RUSSELL S. BARNUM, OF CHICAGO, ILLINOIS.

TELEPHONE-RECEIVER.

SPECIFICATION forming part of Letters Patent No. 574,654, dated January 5, 1897.

Application filed April 3, 1896. Serial No. 586,125. (No model.)

To all whom it may concern:

Be it known that I, RUSSELL S. BARNUM, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Telephone-Receivers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which corresponding letters of reference in the different figures indicate like parts.

The primary object of my invention is to so construct a telephone-receiver that the magnet may be adjusted with accuracy and with the utmost degree of fineness in its relation to the diaphragm and the adjustment maintained regardless of the variations of temperature and the consequent expansion and contraction of the body or case of the instrument.

A further object is to employ a double magnet and to so construct the same as to produce the greatest magnetic effect at or near the center of the diaphragm, all of which is herein after more particularly described, and definitely pointed out in the claims.

In the drawings, Figure 1 is a central longitudinal sectional view of that portion of a telephone-receiver which includes the diaphragm and magnet. Fig. 2 is an end view of the diaphragm end of the telephone-receiver as the same would appear when the diaphragm is removed. Fig. 3 is a side view in detail, sectioned upon the line 3 3, Fig. 2, showing one end of the magnet-supporting bridge and the manner of securing the same to the case in order to provide for proper adjustment; and Fig. 4 is an enlarged sectional view in detail of a portion of the magnet, showing the pole extensions.

Referring to the drawings, *a* represents the usual telephone-receiver case, within which is inclosed a permanent magnet *b*, which may be in any well-known form, but preferably like that shown in the drawings. Upon the outer ends of the limbs of the magnet *b* are attached, by means of screws, as shown, two soft-iron extensions *c*, which are surrounded by the usual coils *d* of an electromagnet, the terminals *e e* of which are connected in the usual way with the circuit-wires *f f*. The

electromagnet is rigidly attached to and supported by a bridge *g*, of brass or other non-magnetic metal, which is extended directly across the case in a line parallel with the diaphragm *l*, the ends of said bridge being adjustably attached to the case by means of screws *h h*, Figs. 2 and 3, which are passed through the bridge and into the case. Upon each side of the bridge, at the respective ends, are located screws *i i*, the heads of which are located beneath said bridge, but so placed as to project laterally therefrom, as shown, the bridge being notched with circular notches *j*, Fig. 2, in order to give free access to the heads of the screws.

The adjustment of the magnet in its relation to the diaphragm is accomplished as follows: The magnet is first rigidly attached to the bridge in any approved way, when the screws *i i* are inserted in the case until their heads are flush with the surface of the notches in the case, which are cut away to receive the ends of the bridge. The bridge is then placed in position and the screws *h* inserted. If the poles of the magnet are found to be too far away from the diaphragm, the screws *h* are loosened and the screws *i* are unscrewed until the bridge is pushed out to the proper distance, when the screws *h* are tightened. It is manifest that by this means the utmost accuracy and nicety of adjustment may be obtained, and when so obtained that it will be permanently maintained as against all contraction or elongation in the case incident to changes of temperature. Inasmuch as the magnet is supported entirely by the bridge, which in turn is attached to the extreme end of the case against which the diaphragm bears, there can be no change between the relative position of the magnet and diaphragm resulting from changes of temperature. When, therefore, the magnet is once properly adjusted, it is not subject to change and requires no manipulation. The advantages resulting from such construction are at once apparent to any one who has experienced the inconvenience of using an ordinary telephone under varying conditions of temperature.

In order that the two poles of the double magnet may exert their effect as nearly as possible upon the center of the diaphragm, I

attach inwardly-projecting pole extensions k k , which are placed as near to each other as possible without impairing their action, thereby producing substantially the same effect
5 upon the diaphragm as a single magnet, but with a much more powerful action.

Having thus described my invention, I claim—

1. The combination in a telephone-receiver
10 of a magnet-supporting bridge placed at the end of the receiver-case adjacent to and parallel with the diaphragm, set-screws inserted into the end of the case having their axes parallel with that of the case and their heads
15 beneath the bridge so as to form stops or rests therefor while their heads are partially exposed, and securing-screws projected through

the bridge and into the case, substantially as described.

2. The combination in a telephone-receiver 20 of a magnet-supporting bridge placed at the end of the receiver-case adjacent to and parallel with the diaphragm, screws i i , inserted into the ends of the case beneath the bridge so as to form rests or stops therefor, notches 25 j j and screws h , substantially as described.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 23d day of March, 1896.

RUSSELL S. BARNUM.

Witnesses:

D. H. FLETCHER,

DE WITT W. CHAMBERLIN.