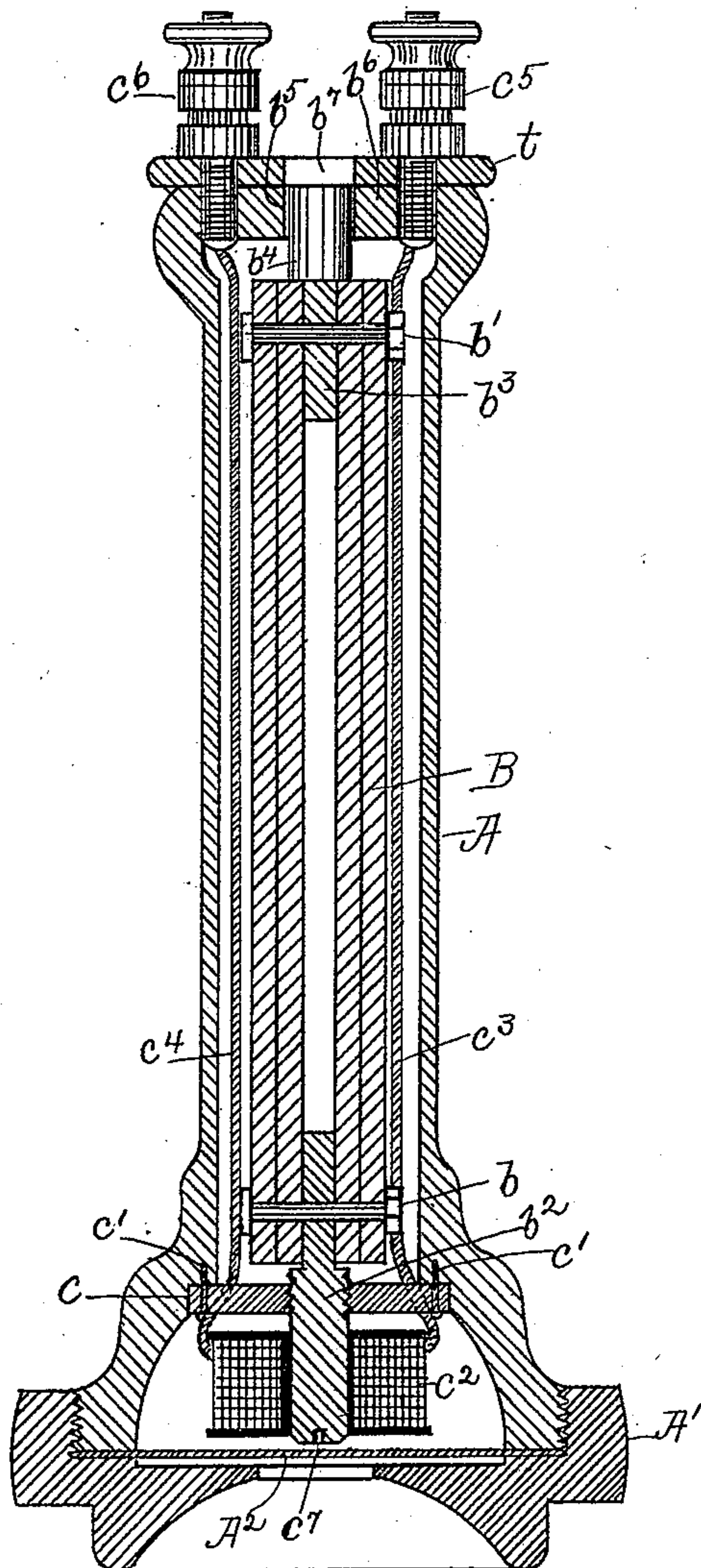


(No Model.)

H. A. CHASE.
MAGNETO TELEPHONE.

No. 516,642.

Patented Mar. 20, 1894.



Witnesses
J. Murphy.
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UNITED STATES PATENT OFFICE.

HENRY A. CHASE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO ALBERT WATTS, OF SAME PLACE.

MAGNETO-TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 516,642, dated March 20, 1894.

Application filed August 12, 1893. Serial No. 482,983. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. CHASE, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Telephones, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to an improvement in that class of telephones known as the hand-phone, and has for its object to provide an instrument, the parts of which are capable of expansion and contraction without disturbing the relative position or equilibrium of the usual diaphragm and its pole piece, whereby the distance between the said diaphragm and its pole piece is maintained substantially constant and is not disturbed by the movement of the case or of the permanent magnet.

In accordance with this invention, the exciting magnet, usually in the form of bar magnets, has rigidly secured to it a soft iron pole piece after the manner now commonly practiced in the ordinary Bell hand-phone. The exciting magnet and its pole piece are secured at or near the front end of the inclosing case or shell, which is usually made of hard rubber, they being secured as herein shown by means of a bridge preferably in the form of a disk screwed or otherwise fastened to the interior of the case.

In order to permit of the expansion and contraction of the hard rubber case and the exciting magnet without disturbing the position of the soft iron pole piece with relation to its diaphragm, the exciting magnet is unattached at its rear end from the hard rubber case and may be provided with an extension preferably in the form of a cylindrical bar or rod, which extends into a suitable hole or socket in the back of the case, the said hole or socket in this instance forming a bearing for the rear end of the exciting magnet. The rate of expansion of the hard rubber case and of the exciting magnet being different, produces an unequal movement of the case and exciting magnet when subjected to changes in temperature, such as experienced in actual service, the movement of the case or shell being greatly in excess of the bar magnet. By leaving the rear end of the exciting magnet unattached from the case or

shell, the latter is free to expand and contract without producing movement or without affecting the exciting magnet, which is also free to expand and contract independent of the case. By this construction, each part of the hand-phone is capable of responding to changes in temperature without effecting the expansion or contraction of the other part.

The drawing represents in longitudinal section a hand telephone embodying my invention.

The telephone case A, the cap A' and the diaphragm A², are and may be of any usual or well-known construction. The case A contains within it an exciting magnet, which may and preferably will be a compound bar magnet B composed, as herein shown, of four parts firmly secured together at both their front and rear ends by the bolts b b'. The bolt b passes through a hole or opening in the rear end of the usual soft iron pole piece b², and serves to firmly clamp or secure the said pole piece to the bar magnet B in the manner now commonly practiced in the ordinary Bell hand-phone. The bolt b' also firmly secures to the compound bar magnet the back pole piece b³, which may be provided with an extension b⁴ herein represented as cylindrical in shape, and which extension projects into a hole or socket b⁵ in the back piece b⁶ of the inclosing case A, the finishing disk t being also provided, as herein-shown, with a hole or socket b⁷ in line with the socket b⁵. The front pole piece b² is shown as extended through a support c preferably made as a disk, which may be secured to the inside of the case or shell A by suitable screws c', the said disk being preferably provided with a threaded opening through which the pole piece is extended, and with the screw threads of which, engage screw threads on the said pole piece, the latter having mounted upon it the usual spool c² having its coils connected by the wires c³ c⁴ to the binding posts c⁵ c⁶ extended through the finishing disk t and the back c⁶ of the inclosing case. The pole piece b² is preferably provided at its end with a slot c⁷ for the reception of a screw-driver or other suitable tool by which the pole piece may be adjusted with relation to the diaphragm A², the cap A' and diaphragm being first removed.

It will be noticed that the front pole piece

b^2 and the rear pole piece b^3 are rigidly secured to the compound bar magnet B, which construction is the same as that found in the Bell handphone as now commonly constructed. It will further be noticed that the compound bar magnet is supported at its front end by the pole piece b^2 and the disk c , while its rear end is supported by the extension b^4 of the back pole piece b^3 . It will further be noticed that the back pole piece b^3 is entirely disconnected or unattached from the case and consequently the latter is free to expand and contract independent of the bar magnet B, so that the case A may respond to changes in temperature without affecting or influencing or being influenced by the permanent magnet B, which by reason of its disconnection at one end, is free to respond to the changes in temperature independent of the case. In this manner, the front pole piece b^2 when once adjusted with relation to the diaphragm A^2 will remain substantially constant and be uninfluenced by the ordinary changes of temperature, and if by reason of very severe or wide differences in temperature, the adjustment of the pole piece b^2 with relation to the diaphragm A^2 should be disturbed, it can be readily corrected by removing the cap A' and the diaphragm A^2 and turn the pole piece b^2

so as to change its position with relation to the diaphragm A^2 .

I claim—

1. In a telephone, the combination with an inclosing case provided at its rear end with a hole or socket, of a permanent magnet provided with a front pole piece rigidly attached to it and having a back pole piece provided with an extension projecting into said socket but disconnected from the said case, and a support for the front pole piece secured to the said shell or case, substantially as described.

2. In a telephone, the combination with an inclosing case, of a permanent magnet having one end free from or unattached to the inclosing case and provided at its opposite end with a pole piece rigidly attached to the permanent magnet, and a support for the said pole piece attached to the inclosing case, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY A. CHASE.

Witnesses:

JAS H. CHURCHILL,
J. MURPHY.