

(No Model.)

J. A. WILLIAMS & S. ABBOTT.
CALL RINGER FOR TELEPHONES.

No. 578,380.

Patented Mar. 9, 1897.

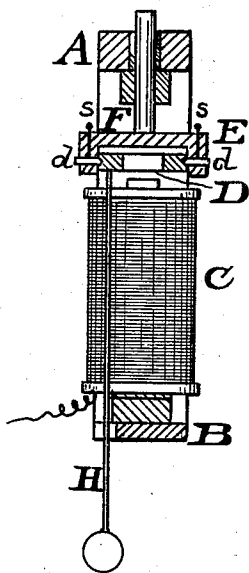


Fig. 2.

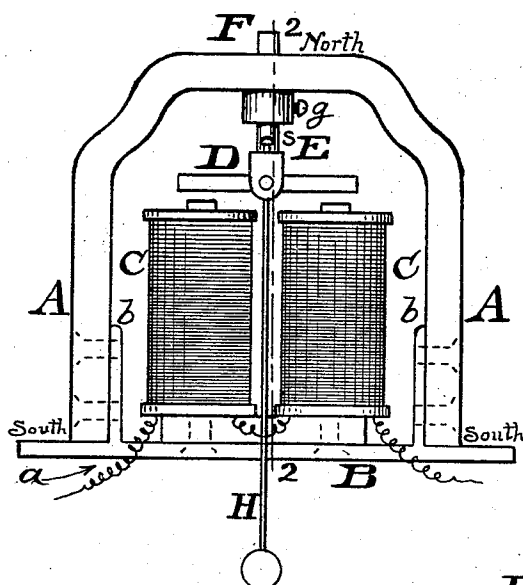


Fig. 1.

Witnesses.
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UNITED STATES PATENT OFFICE.

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CALL-RINGER FOR TELEPHONES.

SPECIFICATION forming part of Letters Patent No. 578,380, dated March 9, 1897.

Application filed April 10, 1896. Serial No. 587,041. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH A. WILLIAMS and SAMUEL ABBOTT, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Call-Ringers for Telephones, of which the following is a specification.

This invention relates to call-ringers for telephones, and has for its object to provide a ringer in which the polarizing-magnet forms the frame to hold the bobbins, yoke, and base, also the vibrating armature. Said magnet is placed in a plane coincident with the axis of the bobbins, so as to occupy less space. Said magnet is of the consequent-pole type and is tripolar, that is, two poles at each end of like sign and one pole in the center over the vibrating armature of approximately double strength to the end poles, opposite sign.

The invention consists in the details of construction substantially as hereinafter described, pointed out in the claims, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, and Fig. 2 is a vertical section on line 2 2 in Fig. 1, of our new ringer.

A is a double magnet bent, as shown, to form a frame, and has its ends secured to a malleable-iron base-piece B, having arms *b b*, to which the magnet is fastened by screws.

C C are the bobbins of the electromagnets, fastened to the base B by screws *c c*.

D is a vibrating armature pivoted at its middle to a yoke E, which has a stem F extending up through the bow of the permanent magnet A and is made adjustable by means of the set-screw *g*.

H is a hammer attached to the armature. The pivots *d d*, on which the armature D vibrates, are adjustably fixed in the yoke by means of set-screws *s s*.

The operations of this construction and arrangement of a ringer are as follows: The ends of the permanent magnet A are made south pole and the bow is north pole, and the lines of polarity of the permanent magnet A are on the same plane with the electromagnetic plane formed by the alternating signaling-current through bobbins C C. By this arrangement of the lines of polarity of both the permanent and electro magnet their efficiency is combined so as to act in a perfectly conjoint manner. When the electric current through the bobbins is in the direction of the arrow *a*, the north pole of the electromagnet is in proximity with the north pole of permanent magnet A, and a repellent effect is produced upon the right-hand end of the armature, and the south pole of the electromagnet is in proximity with the north pole of the permanent magnet A the effect upon the left-hand end of the armature is attractive. Thus the effect on the armature is greater by reason of the combined attractive and repellent forces. The reversing of the current through the bobbins of the electromagnet the effect on the armature is reversed.

Having described our invention, we claim—

1. In a ringer for telephones, a tripolar permanent magnet A and an electromagnet C fixed between the legs of the magnet A, whereby the lines of polarity in both of said magnets are on the same plane, as and for the purpose specified.

2. The combination of the tripolar magnet A and base-piece B, with the electromagnet C, armature D and yoke E, supported by said magnet A, substantially as described.

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Witnesses:

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