

H. J. ROBERTS.
 RINGER FOR TELEPHONES, &c.
 APPLICATION FILED MAY 27, 1907.

1,037,537.

Patented Sept. 3, 1912.

Fig. 1.

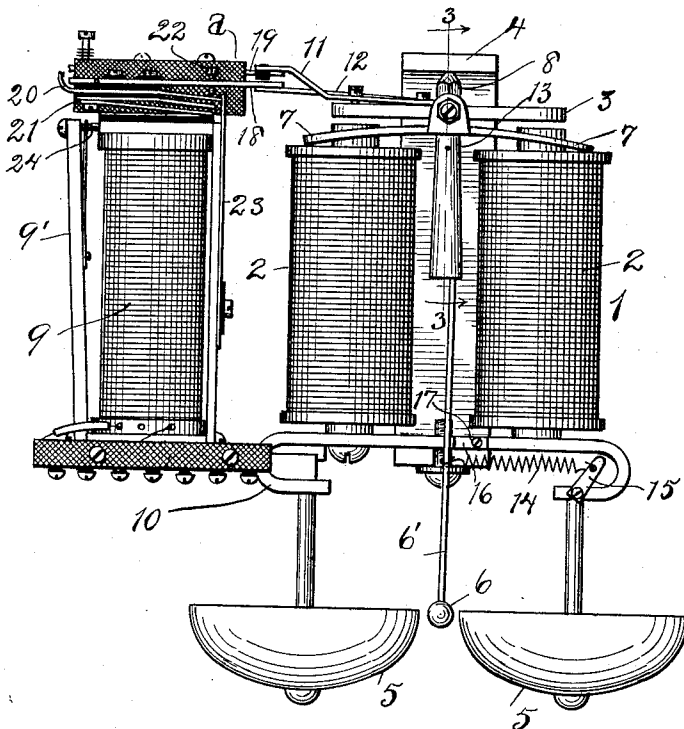


Fig. 2.

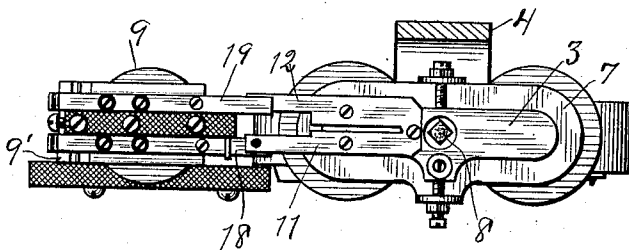


Fig. 3.

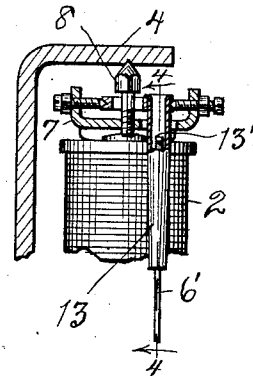


Fig. 4.

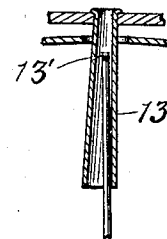
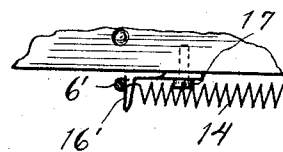


Fig. 5.



Witnesses:
 R. J. Jaeger.
 Emilie Rose.

Inventor:
 Homer J. Roberts.
 By Albert N. Gove.
 Atty.

UNITED STATES PATENT OFFICE.

HOMER J. ROBERTS, OF EVANSTON, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
HOMER ROBERTS TELEPHONE CO., A CORPORATION OF WEST VIRGINIA.

RINGER FOR TELEPHONES, &c.

1,037,537.

Specification of Letters Patent.

Patented Sept. 3, 1912.

Original application filed May 1, 1905, Serial No. 258,192. Divided and this application filed May 27, 1907.
Serial No. 375,842.

To all whom it may concern:

Be it known that I, HOMER J. ROBERTS, a citizen of the United States, residing at Evanston, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ringers for Telephones, &c., of which the following is a specification.

This invention relates to improvements in ringers for telephones, etc., and among its salient objects are to provide a ringer mechanism of the polarized type, so constructed that when energized with current of one polarity the striker will be actuated and the gongs rung, but when energized with current of opposite polarity the striker will remain passive; to provide a construction in which the work accomplished by the magnet is divided, the work of ringing the gongs being performed when the armature moves in one direction, and other work performed when the armature moves in the opposite direction, and these two functions of the armature being independent of each other, to provide simple and effective details of construction and arrangement for carrying into effect the foregoing objects, and in general to provide an improved mechanism of the character referred to.

To the above ends the invention consists in the matters hereinafter described, and more particularly pointed out in the appended claims.

In the drawing—Figure 1 is a view in elevation of a ringer embodying the invention showing also an auxiliary relay attached thereto, certain contacts of which are actuated by the ringer; Fig. 2 is an upper end elevation of the part shown in Fig. 1; the overhanging part of the polarizing magnet being cut away, as indicated by the sectional showing of the latter; Fig. 3 is a sectional view taken on line 3—3 of Fig. 1 and looking in the direction of the arrows; Fig. 4 is a sectional view taken on line 4—4 of Fig. 3 and looking in the direction of the arrows, the magnet spools being omitted; Fig. 5 is an end elevation of a fragmentary part of the central portion of the heel-piece, showing particularly the arrangement of the stop which limits the movement of the striker.

Referring to the drawings, 1 designates as a whole a ringer of a usual type as to its general features but modified as to de-

tails and having a pair of magnet coils 2, armature 3, polarizing magnet 4, gongs 5 and clapper 6. The yoke 7 is provided with an adjusting screw 8, as shown clearly in Fig. 3. In the construction shown the ringer is provided with an auxiliary relay 9 which is secured to the heel-piece 10 of the ringer. The armature of the relay is provided on its side next the relay with extensions 11 and 12 adapted to actuate mechanical contacts of the relay 9.

As is well known, the ordinary polarized ringer is adapted to be used with alternating current, while the present invention is more particularly intended for use with uni-directional pulsating current though equally suitable for alternating current. In previous constructions the clapper or striker has been made rigid with the armature and vibrates positively with the latter in both directions.

As an important feature of my invention I provide means whereby the gongs are rung only when current of one particular polarity is sent through the magnets and the striker remains inactive when current of opposite polarity is employed. To this end the clapper stem 6' instead of being secured directly to the armature, is loosely pivoted within a tube 13, as at 13', and this tube is rigidly seated in the armature so as to vibrate with the latter. The tube is internally of somewhat larger diameter than the clapper stem so as to allow the tube to move in one direction without moving the clapper, as will clearly appear hereafter. To hold the clapper stem normally against one side of the tube I provide a spring 14 secured to the stem near the heel-piece at one end and at its other end secured to an adjustable pivot arm 15 mounted on an extension of the heel-piece. When the armature is centered this stem is held against one side of the tube, as shown clearly in the drawings. In order to thus center the armature, and to insure clear ringing, I provide a limiting stop 16 which is adjustably mounted upon the heel-piece by means of a screw 17. The engaging end of this stop is in the form of an inverted V-spring, as indicated at 16', which yields slightly under the impact of the clapper stem and permits the end of the clapper to strike the gong, notwithstanding the stop is so adjusted as to normally hold

the clapper out of contact. In the present instance the armature is returned to its centered position in the opposite direction by the relay contact device *a*; the latter being
 5 spring pressed. Of course, any usual centering spring might be made to serve this purpose, however.

When uni-directional current of one polarity is sent through the coils the armature is drawn from its centered position
 10 toward one or the other of the pole pieces and in so moving actuates one of the contacts on the auxiliary relay, for example that designated 18. The vibration of the
 15 armature in this direction oscillates the tube toward the right, as seen in Fig. 1, without, however, moving the clapper because of the lost motion between the tube and clapper. When, however, current of opposite polarity
 20 is sent through the coils the armature and tube oscillate the other way and the clapper stem, being in its centered position in contact with one side of the tube, moves positively with the latter, thus ringing the
 25 gongs. This movement also brings extension 12 of the armature into bearing with a contact member 19 mounted on the head of the relay, and in so doing changes the circuit through a group of contact springs
 30 similar to that associated with the contact member 18. There are two contact springs 20 and 21 in the group associated with the contact member 18, of which the former normally closes contact with a contact screw
 35 22 adjustably mounted in contact member 18. A latch-spring 23 mounted on the frame of the relay 9 is so arranged that when the extension 11 of the armature actuates member 18, the latter and the spring 20 moving
 40 together carry the end of the spring into latched engagement with the latch 23 and also bring spring 20 into contact with spring 21. As the member 11 returns with the dying away of the impulse, contact member 18 also returns, thus separating from
 45 the spring 20 now held by the latch 23 and thus opening the circuit between 18 and 20. If the restoring relay 9 is subsequently energized thus drawing up its armature 9',
 50 which armature actuates a plunger 24 movably mounted to extend through the pole-piece of the relay and acting at its opposite end to push off the latch 23. This restores the spring group pertaining to member 18
 55 to normal.

From the foregoing description it will be obvious that the ringer described accomplishes the several objects of the invention hereinbefore set forth. The device is of
 60 special utility when used in conjunction

with a selective party-line telephone system, since when used in this connection the ringer may perform the functions of a relay as well as those of a ringer. For example, the ringer may be used to actuate switching
 65 contacts which will lock out or pass the station at which the ringer is located whenever the ringer is actuated in that direction in which the gongs are not sounded, and used to operate other contacts which control
 70 a subscriber's talking circuit whenever it is operated by current of that polarity which causes it to ring. When so used it will be obvious that successive stations may be passed or locked out without signaling the
 75 subscribers. The use of the ringer in such relation is shown in the original application of which the present application is a division.

I claim as my invention:

1. In telephone or analogous mechanism, a polarized magnet, a gong and a striker, and one-way operative connections between the armature of the magnet and striker, whereby the striker is actuated when the
 85 armature moves in one direction and remains inoperative when the armature is actuated by current of opposite polarity.

2. A polarized ringer, comprising an electromagnet, a permanent magnet, an armature associated with said magnets, a striker,
 90 a gong, and one-way-operative-one-way-idle connections between said armature and said striker.

3. A polarized ringer, comprising an electromagnet having its two poles spaced
 95 apart and an armature pivotally mounted and arranged to extend from pole to pole, a permanent magnet having one of its poles arranged to form in conjunction with the
 100 two poles of said electromagnet a triangular disposition of said poles, a striker, a gong, and one-way-operative-one-way-idle connections between said armature and said
 105 striker.

4. A polarized ringer, comprising an electromagnet having its two poles spaced
 110 apart and an armature pivotally mounted and arranged to extend from pole to pole, a permanent magnet associated with said
 115 magnets, a striker, a gong, one-way-operative-one-way-idle connections between said armature and said striker, a stop against which said striker rests in its normal inoperative position, and means yieldably holding said striker against said stop.

HOMER J. ROBERTS.

Witnesses:

ALBERT H. GRAVES,
 EMILIE ROSE.