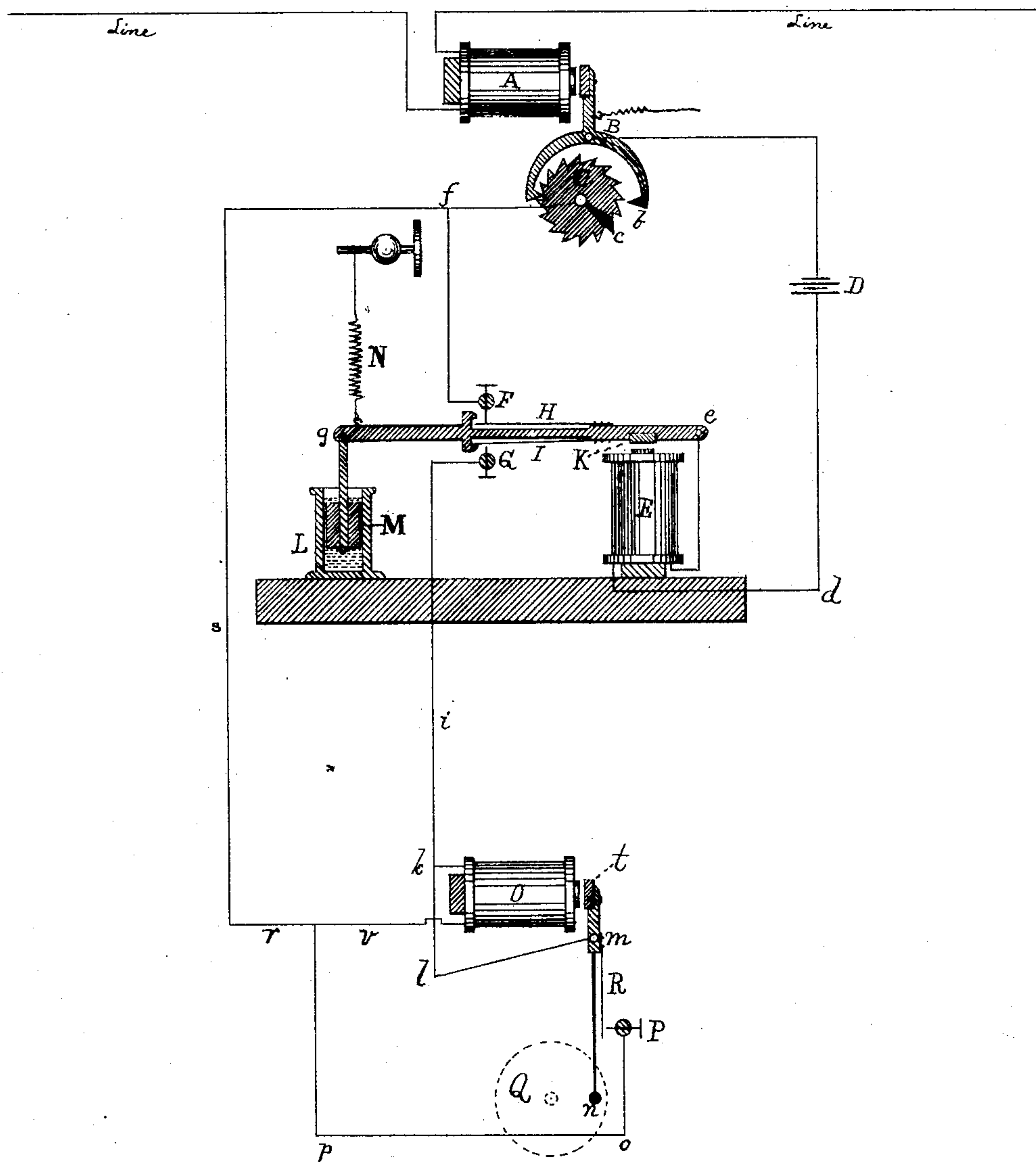


(No Model.)

M. L. BAXTER.
Telephone Call Bell.

No. 238,746.

Patented March 8, 1881.



Witnesses:

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UNITED STATES PATENT OFFICE.

MYRON L. BAXTER, OF AURORA, ILLINOIS.

TELEPHONE CALL-BELL.

SPECIFICATION forming part of Letters Patent No. 238,746, dated March 8, 1881.

Application filed January 4, 1881. (No model.)

To all whom it may concern:

Be it known that I, MYRON LESLIE BAXTER, of the city of Aurora, county of Kane, and State of Illinois, have invented certain
5 new and useful Improvements in Telephone Call-Bells, of which the following is a specification.

The invention relates to call-bells upon a telephonic or other line through which electric
10 currents may pass, and upon which line there are located two or more offices or "subscribers;" and its object is to enable a person at the end of such line, or at what is called a "central office," to cause any particular bell
15 to sound an alarm or call without ringing any other bell than the one intended.

Heretofore all the bells have been rung at the same time, the number of strokes indicating which office or subscriber was called; or,
20 as in some recent improvements, synchronous movement of certain mechanisms at different places has been called into play to render inoperative all the bell-hammers on the line except one. The first method is highly objectionable, because each subscriber is obliged to
25 give heed to all calls, in order to know when his own is sounded, and because the almost continuous ringing of the bell is disagreeable to most persons until after they become so accustomed to it as to disregard not only the
30 calls of other subscribers, but their own as well. In private residences this is particularly annoying. The other method is found to be impracticable, because it has been necessary to use at least two strengths of current—
35 the weaker to move the parts into position and the stronger to sound the bells. As a line is liable to great variation in its condition as regards resistance and insulation, a weak current to-day becomes a strong one to-morrow,
40 and vice versa.

The object of my invention is to provide a means whereby any particular bell may be rung to the exclusion of all the others by the
45 use of one strong current without modification as to strength or direction.

The invention consists in arranging at each station an electro-magnet operated by the current on the main line, and which actuates a
50 step-by-step movement, such as is employed in the ordinary dial telegraph-instrument, a

shunting electro-magnet which is worked by a local battery (the transmitter-battery) when a certain tooth in the escape-wheel makes connection, and a continuous-ringing bell which
55 is shunted into the said local circuit whenever the shunt-magnet is allowed time to fully actuate its armature.

The essential part of my invention consists of so retarding the action of this shunting-
60 magnet that it may at any time be briefly acted upon by the local battery without causing the bell to ring.

The accompanying drawing shows the arrangement at one station, and all others are
65 the same.

Though the invention is susceptible of being used upon either an open or closed circuit, it is here shown and described in use on a
70 closed-circuit line.

In the drawing the main line is shown passing through the office and connected with the electro-magnet A. B and C form the step-by-step movement, the ratchet or escape wheel C and the anchor B being made of non-conduct-
75 ing material, except tooth *c* and prong *b*, which, when in connection, make complete the electric circuit from the local battery D through *d* E *e* H F *f* to the escapement.

E is the shunt-magnet which actuates the
80 armature K and beam *e g*, pivoted at *e*.

L is a cylindrical vessel open at the top and filled nearly full of glycerine or other suitable liquid.

M is a piston fitting loosely in L, and at-
85 tached by its rod to the end of the beam *e g*.

O is the bell-magnet, *n* the bell-hammer, and Q is the bell proper, (indicated by the dotted lines.)

The operation of the devices herein described,
90 when applied to a line, is as follows: The operator at the central office, by sending currents of electricity intermittently through the line, causes all the escape-wheels to advance or re-
95 volve synchronously, one tooth for each impulse so sent, and at each step some one metal tooth is in contact with its metal prong; but at no two stations are the contacts established at the same step. This is an old, well-known device, and I do not claim it as my invention.
100 I only claim to make it practically useful by employing the maximum current to operate it.

Whenever a contact is made the current from the local battery is sent through the helix E, and the armature K, with its beam *e g*, commences to descend; but as it must force down the piston M in the cylinder L, its motion is retarded, because the glycerine or other suitable liquid must be transferred from the lower to the upper portion of the cylinder, passing through a very contracted passage around the piston. The passage is, however, wide enough to allow the piston to move easily if moved slowly. If, now, it is not desired to call that particular office, another step of the escapement breaks the circuit of the battery D, and the spring N slowly restores the beam *e g* to its normal position; but if it is intended to call the station in question, the contact is kept up until the beam *e g* has completed its stroke, when the bell-magnet O will have been shunted into circuit and the short line F *f* cut out, for as the beam descends it makes contact between the spring I and the screw G, and immediately thereafter breaks contact between the spring H and the screw F. The current now passes down the wire *i* to *k*, where it enters the bell-helix O. As soon, however, as this magnet works the armature *t*, the spring R makes contact with the screw P and allows the current to flow through *l m R P o p r s f* to C, instead of through *k, O, v, r, s*, and *f* to C, which latter is its course when passing through the helix O. Working intermittently in this manner, a continuous ringing of the bell Q is secured as long as *c* and *b* are in contact. After a call the spring N restores the beam *e g*, as before described.

It will be understood by the foregoing that whenever an impulse is sent along the line, (open circuit,) or whenever the circuit is broken, (closed circuit,) connection is made at some one office on the line, which, if it be kept up long enough, will result in the ringing of the bell at that office or station; but if said contact be not maintained a certain appreciable time—say one or two seconds—the retardation of the shunt mechanism hereinbefore described will prevent the ringing of the bell.

The retardation of the shunt mechanism may be effected in other ways than the one described and shown, and therefore I do not limit myself to that particular device, but prefer it. A wheel or a train of two or more gears operating a fan, and thus utilizing the resistance of the air, may be successfully employed.

I utilize for a calling local battery the transmitter-battery, which is always at stations where microphone-transmitters are used; but an independent local battery may be employed for this purpose, and on open-circuit lines, for calling central office.

My invention differs from all others with which I am acquainted in that the discrimination between offices and the determination as

to which one shall be called is effected by a long or a short pulsation or break, as the case may be, (and not by increasing, diminishing, or changing the polarity of the current,) whereby I am enabled to use such strength of current as will insure the synchronism of the escape-ments.

Having fully described my invention, I claim as my own, and desire to secure by Letters Patent, the following:

1. The combination of the local battery D, with circuit through *d E e H F f C c* and *b B*, the electro-magnet E, armature K, beam *e g*, retracting-spring N, piston M, cylinder L, electro-magnet A, and escapement B *b C c*, all constructed and operating substantially as described.

2. The combination of the local battery D, with circuit through *d E e I G i k O v r s f C c b B*, the electro-magnet E, armature K, beam *e g*, retracting-spring N, piston M, cylinder L, electro-magnet O, and armature *t*, all constructed and operating substantially as described.

3. The combination of the cylinder L, piston M, retracting-spring N, and the shunting device F H G I, operated by the battery D, electro-magnet E, armature K, and beam *e g*, with proper electrical connections, substantially as shown and described.

4. The call-bell proper, consisting, essentially, of an electro-magnet, O, armature *t*, beam *m*, and bell Q, in combination with the battery D, having proper electrical connections, as shown and described, the electro-magnet E, armature K, attached to the beam *e g*, the retracting-spring N, contact-spring I, contact-point G, piston M, and cylinder L, all constructed and operating substantially as described.

5. The combination of the escapement B *b C c*, operated by the electro-magnet A in the main line of a telegraph or telephone circuit, the local battery D, with electrical connections, as shown, the electro-magnet E, with its armature K attached to the beam *e g*, the shunting device F I H G, operated by said beam *e g*, the retarding device, consisting, essentially, of the cylinder L and piston M, the latter attached to the beam *e g*, the retracting-spring N, and the trembly bell, consisting, essentially, of the electro-magnet O, armature *t*, and beam *m*, all constructed and operating substantially as shown and described.

6. The springs H I and contact-points F G, in combination with the cylinder L and piston M, all constructed and operating substantially as shown and described.

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Witnesses:

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