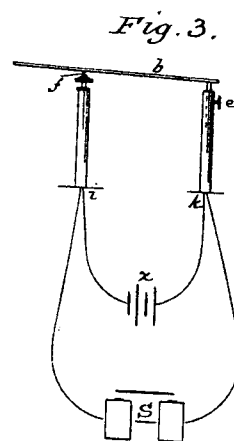
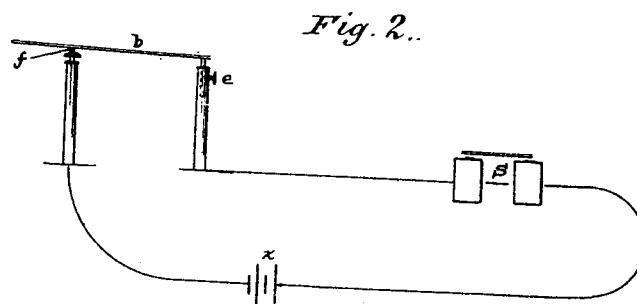
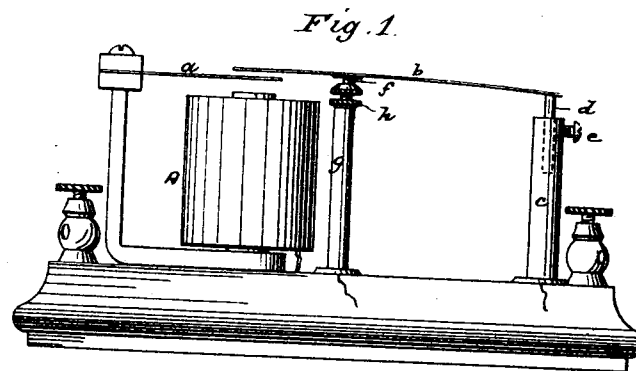


A. G. BELL.
TELEPHONIC TELEGRAPH RECEIVER.
No. 178,399. Patented June 6, 1876.



Witnesses:
C. W. A. Dick
D. P. Lane

Inventor:
Alexander Graham Bell
By Atty. B. McKim, Cady

UNITED STATES PATENT OFFICE.

ALEXANDER G. BELL, OF SALEM, MASSACHUSETTS.

IMPROVEMENT IN TELEPHONIC TELEGRAPH-RECEIVERS.

Specification forming part of Letters Patent No. 178,399, dated June 6, 1876; application filed April 8, 1876.

To all whom it may concern:

Be it known that I, ALEXANDER GRAHAM BELL, of Salem, Massachusetts, have invented certain new and useful Improvements in Receivers for Electric Telegraphs, of which the following is a specification:

In Letters Patent No. 161,739, dated April 6, 1875, I have described a system of telegraphy in which the receiver is put in vibration by electrical impulses sent along the line-wire; and I have claimed the combination in such a system at the receiving end of a local circuit independent of the receiver and a vibratory circuit-breaker in said local circuit, acted upon by the said receiver to effect a permanent make or break, as the case may be, of the local circuit, which is continued so long as the receiver continues to vibrate, and ceases with the cessation of the receiver's vibration.

In illustration of my invention so claimed in said Letters Patent, I have shown and described the combination with the vibratory portion of the receiver of a vibratory circuit breaking lever, which will vibrate or oscillate at a slower rate than that at which the former moves when in vibration.

My present invention has particular reference to the vibratory circuit-breaker, whose vibrations are slower than those of the vibratory portion of the receiver.

In lieu of the oscillating lever hereinbefore mentioned, I employ a spring arm or bar, which vibrates normally at a slower rate than that of the receiver, and whose free end overlaps the vibratory portion of the receiver. This arm or bar has a slight spring action, and it is adjustable to increase or decrease at pleasure the distance between its overlapping end and the vibratory portion of the receiver. The point or tip with which it is in contact for the purpose of closing the local circuit is also correspondingly adjustable.

The nature of my invention, and the manner in which the same is or may be carried into effect, will be understood by reference to the accompanying drawing, in which—

Figure 1 is a side elevation of my improved form of apparatus.

The receiver, in this instance, consists of an electro-magnet, A, to the uncovered leg of which is fixed the vibratory reed or steel spring *a*, which is set in vibration by electri-

cal impulses traversing the line-wire with which the receiver is connected. B is the vibratory circuit-breaker of the local circuit, consisting of a light spring-arm, *b*, supported at one end upon a post, *c*, with its other end overlapping the free end of the vibrating reed *a*. The arm *b* is adjustable to regulate its distance from *a*, the adjustment being effected in the present instance by fixing it to a stem, *d*, movable up and down in the post *c*, and held in place by a set-screw, *e*.

The point or tip by which the local circuit is completed is shown at *f*. It is carried by a post, *g*, in which it screws up and down, being held at any desired adjustment by the binding-nut *h*, movable on the screw-tip. The part *b* vibrates at a slower rate than the part *a*, and under the arrangement shown the vibrations of *a* will consequently cause a permanent break between *b* and *f* so long as the electrical impulses on the line continue. When they cease the arm *b* acts as a damper to instantly check the vibration of the reed *a*.

The arrangement on local circuit is shown in Figs. 2 and 3. In Fig. 2 the instrument breaks the circuit whenever the receiver vibrates. In Fig. 3 the instrument acts as a cut-off so long as the receiver is at rest, the local circuit being short-circuited through *b f i x*. When, on the other hand, the receiver vibrates and consequently breaks contact between *b* and *f*, the local current is through *x i s k x*. In each figure S represents a Morse sounder, register, or other suitable apparatus. In the arrangement shown in Fig. 3 the armature of S should be somewhat farther removed from the magnet, or should offer more resistance than will be needed in the arrangement shown in Fig. 2.

I have represented the instrument as operated to break contact between the parts *b f* when the receiver vibrates. It will, however, be readily understood that the converse of this arrangement may be employed without departure from my invention.

It will also be understood that my present invention is applicable not only to the intermittent system described in my aforesaid Letters Patent, but also to the undulatory system described in my recently-issued Letters Patent of March 7, 1876.

What I claim, and desire to secure by Let-

ters Patent in a system of telegraphy substantially such as described, is as follows:

In a system of telegraphy in which the vibrating receiver operates the circuit-breaker of a local circuit independent of said receiver, as described, a vibratory circuit-breaker for said local circuit, consisting of a light spring-arm whose free end overlaps the reed or vibrating portion of the receiver, in combination with a contact tip or point in said circuit with which

the spring-arm makes and breaks contact, substantially as set forth.

In testimony whereof I have hereunto signed my name this 13th day of March, A. D. 1876.

ALEXANDER GRAHAM BELL.

Witnesses:

THOMAS E. BARRY,
CHAS. E. POWERS.