

E. T. GILLILAND

Assignor to
H. D. ROGERS.

Dial Telegraph.

116429

PATENTED JUN 27 1871

Fig. 1.

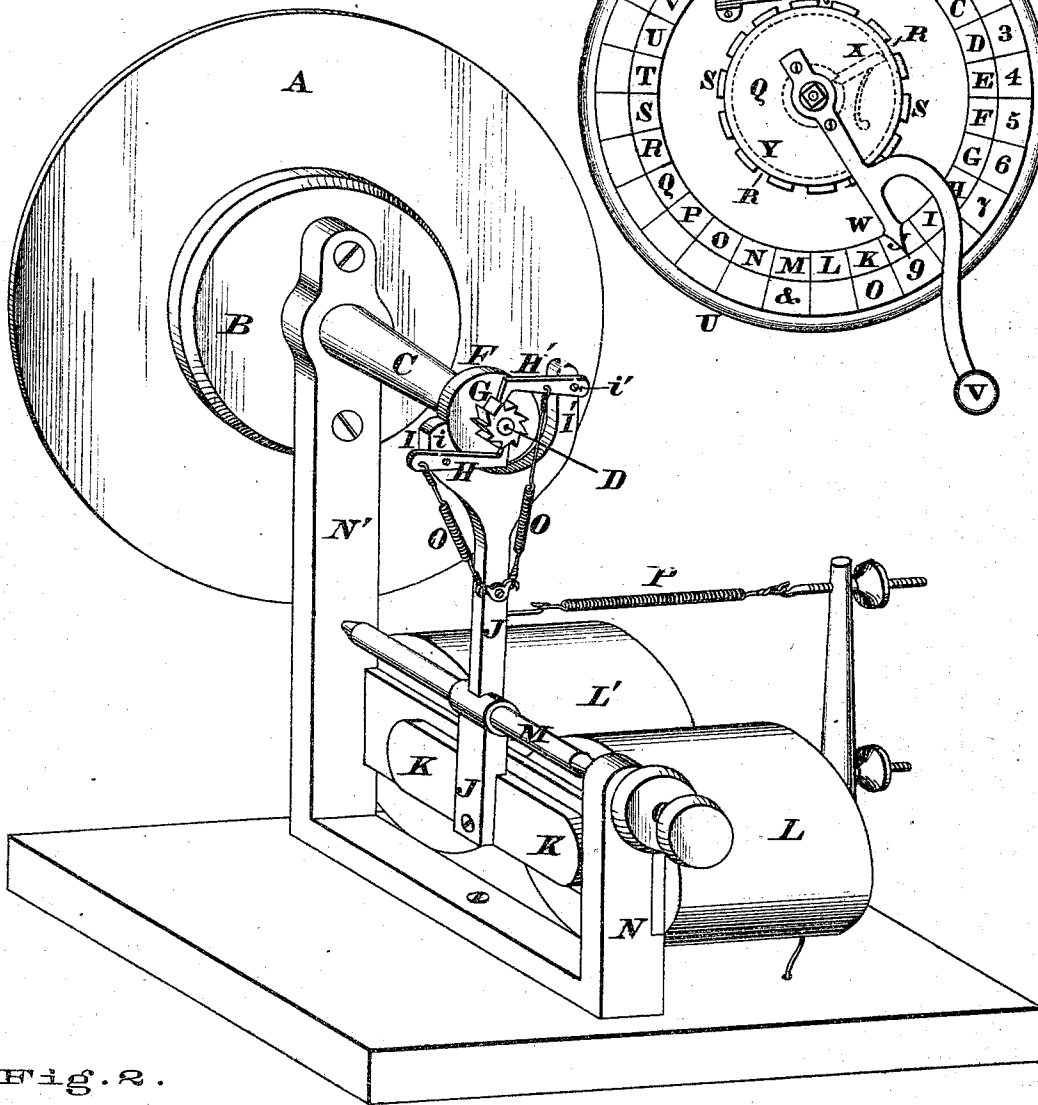


Fig. 3.

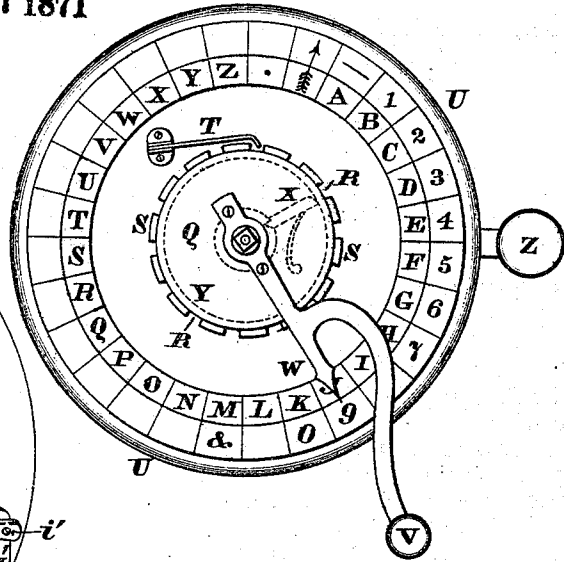
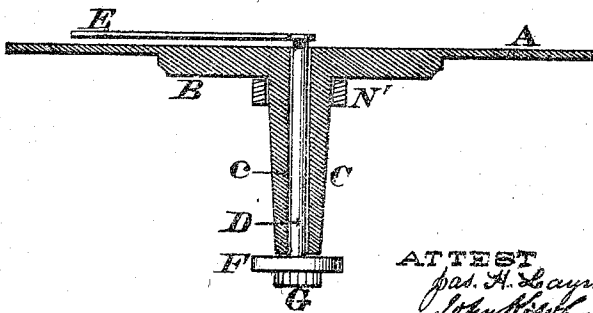


Fig. 2.



E. T. Gilliland
INVENTOR.
By *Smith & Sons,*
Attys.

ATTEST
Jas. H. Layman
John H. Layman

UNITED STATES PATENT OFFICE.

EZRA T. GILLILAND, OF CINCINNATI, OHIO, ASSIGNOR TO HIRAM D. ROGERS,
OF SAME PLACE.

IMPROVEMENT IN DIAL-TELEGRAPH APPARATUS.

Specification forming part of Letters Patent No. 116,429, dated June 27, 1871.

To all whom it may concern:

Be it known that I, EZRA T. GILLILAND, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain Improvements in Dial-Telegraphs, of which the following is a specification:

This invention relates to that class of telegraph apparatus for which Letters Patent No. 97,076 were issued to myself and Peter Neff, Jr., November 23, 1869; and my present improvement consists in providing the vibrating arm that carries the armature with two branches, of which each branch serves both to carry a propelling-pawl and also serves as a check or stop to regulate the stroke of the arm, so that each stroke forward or backward of the arm is made effective to propel the ratchet, and, consequently, to move the pointer.

Figure 1 is a perspective view of a telegraph apparatus embodying my improvement, and Fig. 2 is an axial section through the dial-plate and its accessories. Fig. 3 is a face view of my transmitter.

A represents the dial-plate, and said plate, together with its stiffening-boss B and hub C, are all preferably cast in one piece, as shown in Fig. 2. The said plate, boss, and hub have a common axial aperture, *c*, which is traversed by a shaft, D, which carries at one end a pointer, E, and at the other end a disk, F, and ratchet-wheel G. The devices E, F, and G are firmly attached to said shaft D so as to rotate therewith. Adapted to engage with the teeth of ratchet-wheel G are two pawls, H H', which are pivoted at *i i'* to the forked extremities I I' of a vibrating arm, J, to whose lower end is secured the armature K of the electro-magnets L L'. The arm J is attached to a rock-shaft, M, which is journaled in standards N N', that serve to support the dial and the magnets. O O' are springs which maintain the pawls H H' in gear with the ratchet-wheel. P is a spring which retracts the arm J after its armature K has been attracted by the magnets L L'.

When the armature K is attracted toward the magnets L L' the arm J is vibrated upon its bearing M in such a manner as to move the extremity I' of said arm toward the disk F and the other extremity I away from it. This movement of the arm causes the pawl H' to act upon the ratchet G in such a manner as to rotate the shaft D, and with it the pointer E, which latter is carried a

sufficient distance over the dial-plate to pass from one letter, numeral, or character thereon to the adjoining one. The ratchet-wheel having been thus rotated a certain fixed distance, the arm I' impinges against the periphery of the disk F and thereby acts as a brake to arrest the further rotation of shaft E. By this arrangement any improper movement of the pointer is prevented. The current lines being broken or opened, as the case may be, the spring P acts to retract the arm J, and thus causes the devices H and I to operate in precisely the same manner as the ones H' and I' had previously done. The double arms I I', pawls H H', and ratchet G convert an ordinary instrument into a double-acting apparatus, whereby a message can be sent in one-half the time that is usually consumed. By making the arm of each pawl serve as stop for the opposite pawl the arms are made to discharge a double function, so that a special stop, having no other use, is rendered unnecessary. The pawls, the branched extremities of the arm, and the ratchet are so arranged relatively to each other that each stroke advances the ratchet just far enough for the engagement of the opposite pawl on the return stroke, so as to give two impulses for every tooth in the ratchet.

The transmitter preferably employed by me in connection with the above-described mechanism is constructed as follows: Q is a disk, marked to correspond with the principal dial, and whose marginal notches R and intermediate smooth portions S serve, in connection with a spring-conductor, T, to alternately make and break the circuit. The disk Q is journaled upon a suitable stud rising from the base U, and is capable of being rotated by means of a handle, V, whose index W points in succession to the various characters upon the disk-circle. A pawl, X, bearing against a collar, Y, prevents retrograde motion of the disk. Whenever the circuit is completed, by the contact of the conductor with raised portion S, the armature is attracted toward the magnet and the finger made to indicate a corresponding character on the dial, and whenever broken another corresponding character is indicated. A switch, Z, of customary construction, may be employed in connection with my apparatus.

I am aware that transmitting devices, consisting of revolving toothed disks bearing against circuit-closing springs, have before been made with pawls and stationary ratchet-wheels to prevent

reverse motion. My pawl X, bearing by friction on the collar Y, is superior to the above in that it arrests the motion more instantaneously at any point.

I claim as my invention—

1. A double-acting dial-telegraph, consisting of the shaft D E, disk F, ratchet-wheel G, forked and vibrating arm I I' J K, and actuating-pawls H H', when arranged to operate substantially as herein described and set forth.

2. The dial-plate A, boss B, and hub C, when cast in one piece, as herein described.

3. The described combination of notched disk Q R S, spring-conductor T, handle V, index W, pawl X, and collar Y, for the purpose described.

In testimony of which invention I hereunto set my hand.

Witnesses: E. T. GILLILAND.

GEO. H. KNIGHT,
JAMES H. LAYMAN.