(No Model.)

F. ANDERSON.

AUTOMATIC TELEGRAPHY.

No. 431,793. Patented July 8, 1890.

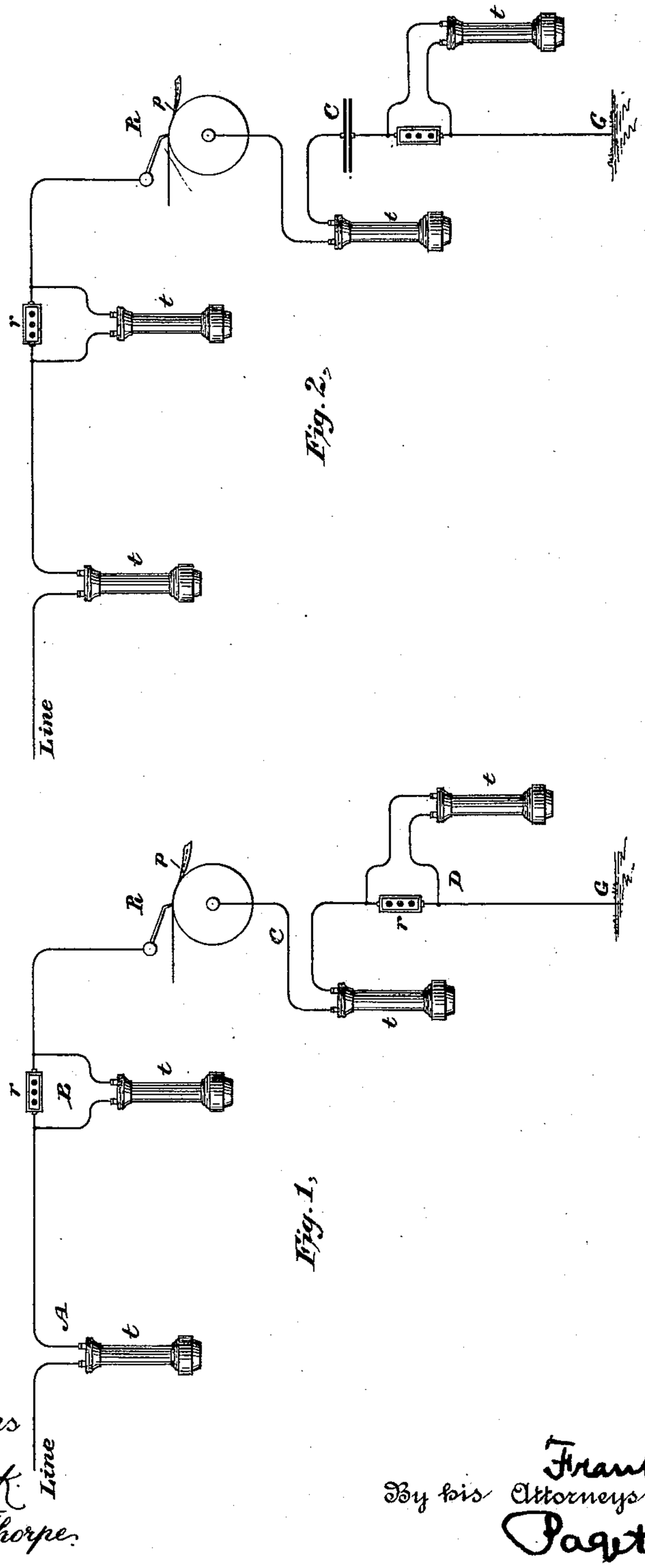

Fig. 1.

Fig. 2.

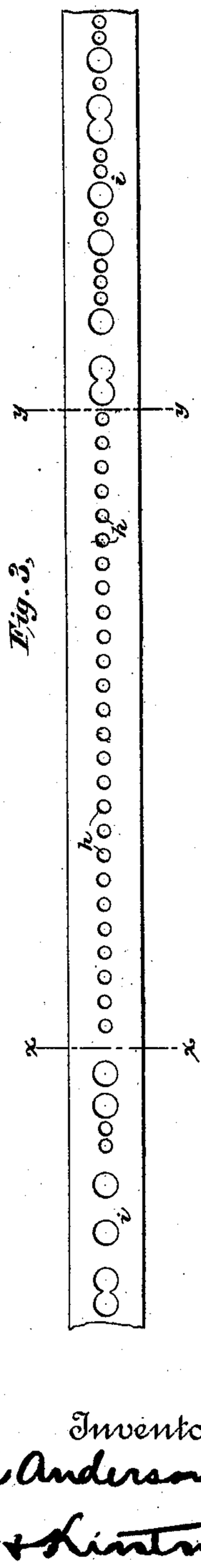

Fig. 3.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 431,793, dated July 8, 1890.

Application filed March 8, 1890. Serial No. 343,180. (No model.)

To all whom it may concern:

Be it known that I, FRANK ANDERSON, a citizen of the United States, residing at Peekskill, in the county of Westchester and State of New York, have made a new and useful Improvement in the Art of Telegraphy, of which the following is a specification.

My invention relates particularly to improvements in the art of automatic telegraphy, and its objects are, first, to enable the operator or attendant at a receiving-station in an automatic telegraphic system to detect any fault or error in the received message due to influences outside of the transmitter—as, for instance, extraneous breaks caused by the opening of the circuit in any manner—of defects in the recorded message, which are the result of swinging contacts from other wires, and, second, to enable the attendant to determine the exact number of messages sent and recorded when several messages have been transmitted from one continuous transmitting strip or fillet and received upon a chemically-prepared or equivalent receiving-fillet, thereby affording a check between the transmitter and receiver. I accomplish these objects by the practice of the method and the use of the apparatus hereinafter described, but particularly pointed out in the claims which follow this specification.

My invention will be fully understood by referring to the accompanying drawings, in which—

Figures 1 and 2 disclose the receiving ends of automatic telegraphic apparatus with my improvement attached. Fig. 3 is a plan view of the transmitting strip or fillet with my improved arrangement for detecting the separation of several messages on a common transmitting strip or fillet.

The transmitter may be of usual type, although I prefer the form displayed in my patent, No. 406,982, granted July 16, 1889, and in which the transmitting-fillet has perforations arranged in a single or continuous row, the transmitting-battery being shunted by the perforations, as therein specified.

The first part of my invention consists in placing an audible detecting device at the receiving end of the line, which will give indication of any abnormal condition due to other causes than the transmitter. I prefer to use as such detecting device a telephone *t*, so placed with relation to the receiving-attendant that all electrical impulses coming to the receiving-fillet *p* will cause said telephone to make an audible indication thereof. This telephone, if of low resistance—say from one to four or five ohms—may be placed directly in the main-line circuit in advance of the receiver R, as shown on the left in Figs. 1 and 2, or it may be in a shunt around a rheostat *r*. If of higher resistance, it should preferably be located between the receiver and the earth, and either directly in the circuit or around a rheostat, as shown.

In the transmitting strip or fillet shown in Fig. 3 the perforated message is indicated by the letter *i*, and the continuous row of small perforations *h* discloses the nature of the second part of my invention for distinguishing the number of messages transmitted.

The operation is as follows: As the transmitting-fillet is drawn beneath the transmitting-brush at the transmitter, (not shown,) the perforations *i* send the impulses to line, as disclosed in my prior patent. These impulses make the record on the receiving-fillet *p*, and simultaneously set up in the telephone or detector *t* a uniform or approximately uniform sound, and any variation in this sound, due to a break, a swinging cross, or analogous cause, will at once warn the receiving attendant, and he can call for a repetition of that particular message wherein the mistake occurred. Similarly the continued series of similar perforations *h* after each message will change the pitch for a brief period and answer as a check to the number of messages transmitted and received.

I do not limit myself to the specific means herein disclosed for giving an audible signal of any imperfection in the record received or for detecting audibly the space between the messages, as I believe myself broadly entitled to the method of audibly detecting such features by any audible mechanism which responds to abnormal impulses of the nature named, and I desire it understood that the claims hereinafter shall be construed broadly

to cover any means for practicing the methods named.

I am aware that it is old in the art of telegraphy to receive Morse or analogous characters by sound due to a Morse sounder, and that such devices have been used in connection with Morse recorders. I am also aware that diaphragms or telephone-receivers have been used to give audible records of Morse and analogous codes, and I make no claim to such constructions or to the use of such instruments for the purpose of giving an audible and intelligible record, my invention being directed to the use of such a delicate instrument as a telephone or equivalent receiver for detecting abnormal conditions in a telegraphic circuit while messages are being transmitted and recorded.

During the practice of the methods and the use of the apparatus described and hereinafter claimed Morse or similar characters are transmitted at from five hundred to three thousand words per minute, and the detectors give out a regular and well-defined continuous sound and no one element of a word or sound, is distinguishable to the ear of an attendant; but should an abnormal condition occur, as a long cross by an adjacent line or a high-pitch note as given by the regularly-located perforations at the end of the messages, the attendant's attention is at once attracted, and he may call for a repetition of the message or know that the same has been completed.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The described method of verifying the correctness of the record in an automatic telegraphic system, which consists in making an audible record, which is the duplicate of the received record, the individual elements of the audible record being unintelligible to the operator, substantially as described.

2. The described method of verifying the correctness of a received record in an automatic telegraphic system, which consists in causing the transmitted impulses to effect an audible receiver simultaneously with the automatic receiver, the individual elements of the audible record being unintelligible to the receiving operator, substantially as described.

3. The described method of audibly indicating the completion of each of a series of messages transmitted automatically over a telegraphic circuit and automatically recorded at a receiving-station, consisting in making an audible record of each message at the receiving-station, which is the duplicate of the received record, the individual elements of such audible record being unintelligible to the receiving operator, and then causing a noticeable difference in such audible record after each message, which will attract the attention of the operator, substantially as described.

4. The described method of detecting the completion of each of a series of automatically-transmitted messages at a receiving-station where the received messages are automatically recorded, which consists in causing the transmitted impulses to effect an audible receiver simultaneously with the automatic receiver, the individual elements of the audible record being unintelligible to the receiving operator, and then causing the audible receiver to noticeably change its pitch after each message transmitted, substantially as described.

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