

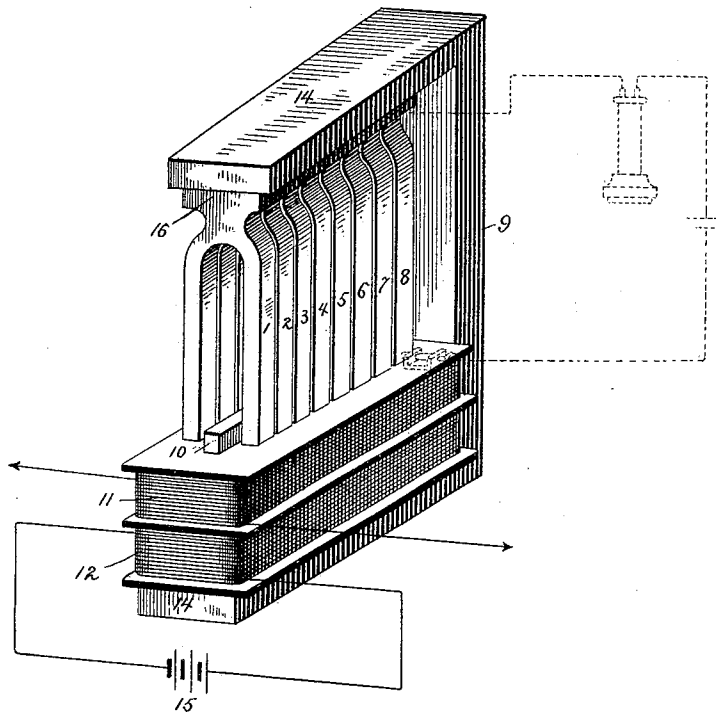
(No Model.)

F. VAN RYSELBERGHE.

TELEGRAPH RECEIVER.

No. 388,092.

Patented Aug. 21, 1888.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

FRANÇOIS VAN RYSELBERGHE, OF BRUSSELS, BELGIUM.

## TELEGRAPH-RECEIVER.

SPECIFICATION forming part of Letters Patent No. 388,092, dated August 21, 1888.

Application filed December 27, 1887. Serial No. 259,105. (No model.)

*To all whom it may concern:*

Be it known that I, FRANÇOIS VAN RYSELBERGHE, a subject of the King of Belgium, and a resident of Brussels, Belgium, have invented certain new and useful Improvements in Telegraph-Receivers, of which the following is a specification.

My invention relates to tone or harmonic telegraphy, and more especially to apparatus designed for use as receivers in connection with such systems, and more particularly in connection with such a system as is described and patented to me in United States Patent No. 370,577.

In the use of such systems of telegraphy, especially when it is desired to employ but a single-line circuit for the transmission of a large number of messages, it is desirable, and indeed necessary, to have very delicate and at the same time positively-acting instruments to serve as receivers, it being understood that each receiver is intended to respond to one only of a number of transmitters which may be superposing on or sending over the same main line varying series of electric impulses or changes of electric potential at the same time.

I make use of a single electro-magnet, constructed and arranged substantially as herein-after set forth, and illustrated in the accompanying drawings, which show a perspective view of a receiving-instrument made in accordance with my invention, and which is arranged to control and operate all the receiving-instruments at that end of the line.

A series of tuning-forks, 1 2 3 4 5 6 7 8, are mounted upon a frame, 9, which is preferably of soft iron, and which is bent as shown in the drawings, and the free ends or tines of these forks extend inward, and projecting between these ends is a core, 10, which is also mounted upon and forms part of the frame 9. Surrounding this core is the line-wire coil 11, and it will thus be seen that when the frame is of soft iron the whole constitutes an electro-magnet in which the core forms one pole and the tuning-forks the other pole, and in this way the forks are magnetized. In order, however, that the forks may be maintained in a magnetic condition independent of the current of the line-circuit and a permanent magnetic field may be created between the free ends of the fork and the

common core-piece 10, I preferably apply an additional coil, 12, to the core, which is connected up with a local-battery circuit, 15. It will be understood, of course, that when the receiving-instrument is to be used in a duplex or quadruplex system the magnet will be differentially wound in the usual way. It will thus be seen that all the tuning-forks are operated by a single electro-magnet having a core common to all the forks, and while it is true that each fork will be affected by a part only of the energy of the line-current, I have found by actual experiment that the use of a single electro-magnet controlling the whole set of receivers gives much better results than when there is a separate electro-magnet for each receiving-instrument.

Of course it is understood that each tuning-fork will be tuned or adjusted so as to have a certain definite or fundamental rate of vibration and to be operated only by variations in the electric potential of the line-circuit corresponding to such rate, and which variations are caused by suitable transmitting devices tuned or adjusted in accordance with the various forks; and in order to construct and adapt the forks to have such variations in fundamental tones, I may make use of any of the well-known characteristics of the forks which control the rate of vibration. In the instance shown all the forks have a common base-piece, 16, which is attached to the arm 14 of the frame 9, and this frame may be so arranged that the length of the forks will vary in proper relative proportion to produce the various fundamental tones; or the legs or tines of the respective forks may be of different weights, so that they will have the proper fundamental tone.

While the forks themselves may be used as receiving-instruments, in practice I preferably utilize the forks to operate some local receiving-instrument to intensify the signals received by the forks, and I preferably make use of a local circuit including a telephone, as indicated in dotted lines, and arranged so as to be operated by the fork, substantially in the manner set forth in my application, Serial No. 255,252, filed November 15, 1887; but it will be understood that any other intensifier may be used.

From the above arrangement it will be seen that I am enabled to reduce the expense of constructing the numerous receiving-instruments,

to utilize the strength of the currents coming over the main line to the best advantage, and to provide an instrument which may be readily arranged in a duplex or quadruplex system.

5 Without limiting myself to the precise construction and arrangement shown, as it is evident it may be varied by those skilled in the art without departing from the principle of my invention, what I claim is—

10 1. In a tone or harmonic telegraph, a receiving-instrument consisting of a bent metallic frame having upon one end an extended core-piece, a main-line coil surrounding said core-piece, and a series of tuning-forks having  
15 varying fundamental rates of vibration, arranged upon the other end of the frame and extending into proximity with the core-piece, substantially as described.

20 2. In a tone or harmonic telegraph, a receiving-instrument having a single electro-

magnet and core therefor, and a series of tuning-forks arranged to be operated by said magnet, and a local battery and coil connected therewith surrounding said core, substantially as described.

25 3. In a tone or harmonic telegraph, a receiving-instrument consisting of a bent magnetized frame, a series of forks secured to and constituting one pole of the frame, and a core-piece secured to and constituting the other  
30 pole of the frame and controlling all the forks, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANÇOIS VAN RYSSELBERGHE.

Witnesses:

A. CORMAND,  
ADOLF STEINE.