E. R. GILL.

SELF ANSWERING SIGNAL SYSTEM.

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934,908. Patented Sept. 21, 1909.

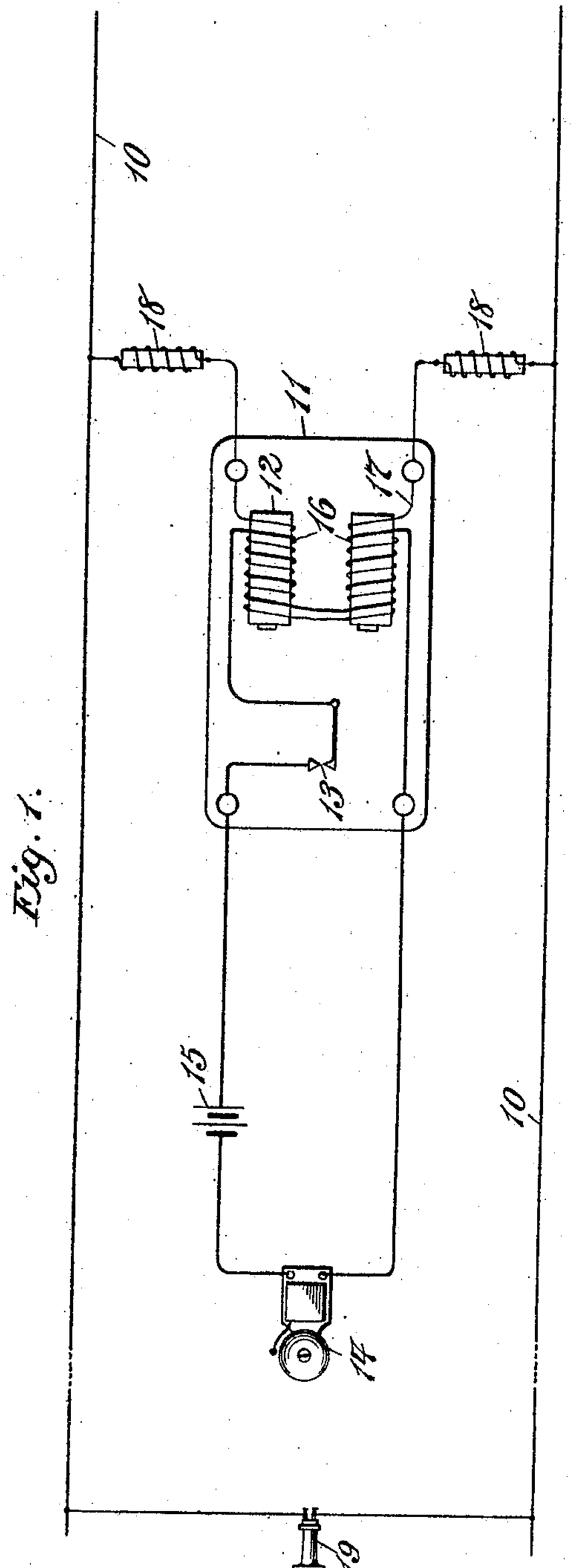

Fig. 1.

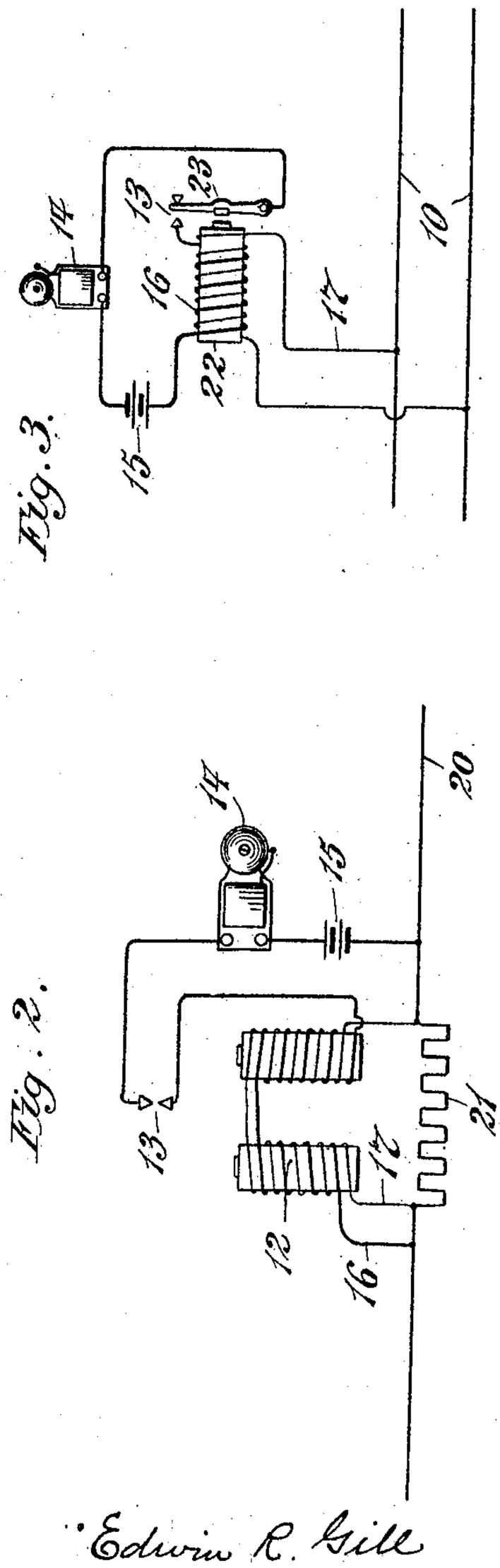

Fig. 3.

Fig. 2.

Witnesses:
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UNITED STATES PATENT OFFICE.

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SELF-ANSWERING SIGNAL SYSTEM.

934,908. Specification of Letters Patent. Patented Sept. 21, 1909.

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all whom it may concern:

Be it known that I, EDWIN R. GILL, a citizen of the United States, residing in the city of Yonkers, county of Westchester, and State of New York, have invented a certain new and useful Improvement in Self-Answering Signal Systems, of which the following is a specification.

The present invention has relation to a simple form of answer back, whereby on closing a local circuit at a distance by means of the main circuit, the operator may be instantly apprised of the successful operation of the circuit closer.

This invention is intended principally for use in connection with telegraphic and telephonic signals and may be used either where a local circuit is closed electro-magnetically without the use of selective mechanism or where selective devices are employed for operating one signal alone of a considerable number.

I have shown my improvement in three illustrative modifications in the accompanying drawings each of the three figures of which is a diagram showing one form of the invention.

In Figure 1 the main line over which the signals are operated is indicated at 10, and at 11 is indicated the base of any desired form of selective circuit closer operated by an electromagnet shown in diagram at 12. My invention is not concerned with the details in this selective device, many forms of which are well known; and, while the form shown in my Patent No. 906,523, dated December 15th 1908, is suitable for this purpose, I am not limited to use of this type of device. In Fig. 1 the circuit closer or switch, whereby the local signal circuit is established, is indicated in diagram at 13. This is operated by means controlled by the magnet 12.

The signal in the form shown is an ordinary bell 14, in series with a local battery 15, with the switch 13, and with a coil 16, on the magnet 12. The local circuit coil on the magnet is distinguished from the operating circuit 17 connected with the main line by the use of heavy lines to indicate the former and light lines for the latter.

In some cases it may be found advantageous to place a reaction or choke coil 18, on one or both sides of the local operating switch circuit, for the purpose of arresting rapidly undulating or oscillating currents such as those on telephone circuits and those due to lightning.

The operation of the answer back depends upon the inductive effect of the undulatory or interrupted current set up in the local signal circuit by direct action of the interrupter forming part of the signal as well as by the "kick back" of its magnet. This current, passing through the coils 16 which act as a primary, while the magnet itself acts as a converter core, set up by induction a corresponding alternating current in the main line, which can be distinctly perceived by means of a telephone 19, or other device sensitive to these currents. Where the choke coils 18 are used they should be so proportioned as to allow passage of the relatively slow undulations produced as above described, while at the same time preventing passage of such relatively high undulations as are produced in telephone circuits by talking or as are produced by lightning. Thus as long as the switch 13 remains closed, the buzzing will be heard at 19, whereby the operator knows that he has been successful.

In Fig. 2 is shown an arrangement for use where a number of signals are arranged in series on a single wire 20. In this case the non-inductive resistance 21 may or may not be used in shunt with the magnet circuit 17.

In Fig. 3 is shown a single magnet 22, adapted, when energized, to draw to it the armature 23 to close the signal circuit at 13. The same principle of answering back by induction from the coil 16 on the operating magnet is embodied here as in the other forms shown.

What I claim is—

1. A self-answering signal system comprising a main line, an electro-magnet having coils connected to said main line, an electro-magnetic signal device, an electric circuit for said signal device including one or more coils on said first named electro-magnet, and a circuit changer for said last named circuit, arranged to be operated by energizing said magnet, substantially as described.

2. A self-answering signal system comprising a main line, a selective signal operator having an operating electro-magnet whose coils are connected to said main line, an electro-magnetic signal device, an electric circuit for said signal device including one or more coils on said electro-magnet, and a circuit changer for said last named circuit, arranged to be operated by said selective signal operator, substantially as described.

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