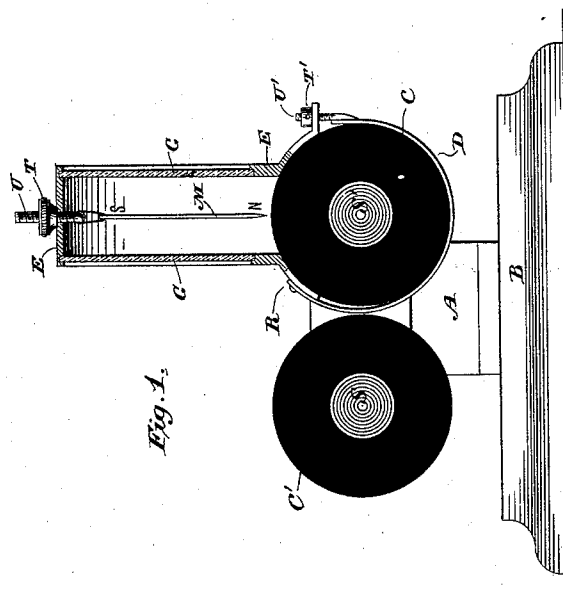
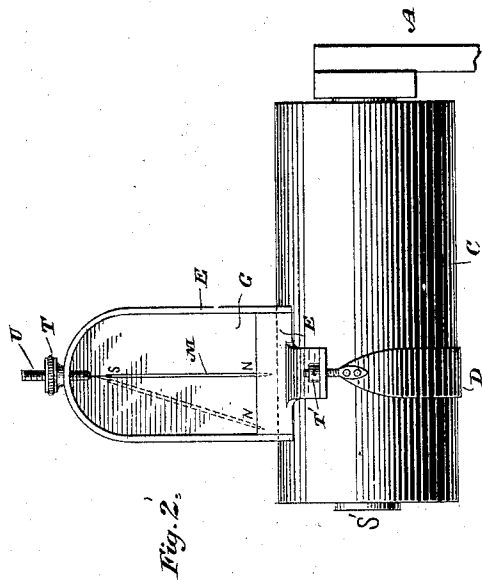


(No Model.)

M. A. DEUEL.
ELECTRICAL INDICATOR.

No. 468,597.

Patented Feb. 9, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

MARION A. DEUEL, OF ROCHESTER, NEW YORK.

ELECTRICAL INDICATOR.

SPECIFICATION forming part of Letters Patent No. 468,597, dated February 9, 1892.

Application filed July 3, 1890. Serial No. 357,673. (No model.)

To all whom it may concern:

Be it known that I, MARION A. DEUEL, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have made a new and useful Invention in Electrical Indicators or Tell-Tale Devices, of which the following is a specification.

My invention is directed particularly to an improvement in electrical indicators for use with telegraphic or analogous instruments; and its object is to indicate at all times the exact electrical condition of a telegraphic or analogous electrical line or circuit in such manner as to disclose whether or not the line is in use.

It is a well-known fact that oftentimes a telegraphic line may be in use and the relays or signal-receiving instruments in the circuit may be in such poor adjustment as not to indicate that fact, and this being the case an operator is liable to "break in" on regular business which is passing over the line.

It is the essential object of my invention to prevent such accidents, and I accomplish this object by the use of a device which indicates at all times the exact electrical condition of the line and for all instruments located therein. I provide each relay with a delicate magnetic indicator which is sensitive to all main-line currents, and will at all times indicate whether or not there are currents traversing the main line.

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

Figure 1 is an end elevational view of a main-line relay of well-known form with its armature removed and having one of my indicators attached thereto, the same being shown in sectional elevation. Fig. 2 is a side elevational view of the apparatus, as seen looking at Fig. 1, from right to left.

Like letters of reference represent like parts wherever used.

CC' are the coils of an ordinary telegraphic relay, either neutral or polar, and SS' are the cores thereof, said cores and coils being supported on a base B by a standard A of the usual type.

Near one end of one of the relay-coils I attach my indicator, which consists of a mag-

netic needle M, permanently magnetized and supported in a non-magnetic frame E, having front and rear glass or other transparent sides G, said frame being held in position by a metallic band or strap D, secured to ears or lugs having substantially the contour of the relay-coil, the band being provided with a screw U' and an adjustable nut T' for securely fastening the apparatus around the coil of the relay. The magnetic needle M is suspended freely by a silken or equivalent cord to an adjustable screw U in the top of the frame and provided with a set-nut T, the parts being arranged to adjust the needle vertically, as clearly shown in Fig. 1.

The operation of the apparatus is as follows: When signaling-line currents are passing through the relay-coils, the needle M will be caused to swing back and forth by the action of the core S' and coil C on its lower or free end, thus indicating that the line is in use. Should the circuit be closed and not in use for the purpose of transmitting a message, the needle will assume a permanent position, (shown in dotted lines in Fig. 2,) owing to the attraction of the south pole S' for the north pole N of the delicate needle. Should the circuit be permanently broken, the needle will hang perpendicularly, as shown in full lines in Fig. 2.

I do not limit myself to the specific arrangement of parts herein disclosed for giving a delicate indication of the condition of a telegraph or analogous line, as I believe it is broadly new with me to provide a telegraphic relay or main-line instrument with a delicate magnetic indicator, and my claims hereinafter are directed, broadly, to an indicator of this generic nature; nor do I limit myself to the specific location of my indicator upon the coils of the relay or signal-receiving instrument, as it may be fixedly secured on the desk of the operator anywhere in proximity to the relay-coils.

I am aware that a galvanometer or indicating apparatus controlled by electrical currents and located directly in the line with an automatic telegraphic receiving apparatus is old, and that a polarized needle has been used for the purpose of closing a local circuit through an alarm mechanism, said needle being influenced by the cores of an electro-magnet di-

rectly in a burglar-alarm circuit, and my invention is not directed to apparatus of this nature, but is designed particularly for use in connection with electro-magnetic telegraphic relays as a supplemental apparatus which shall be a delicate indicator of the electrical condition of the line to which the relay is connected.

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

1. An indicator for indicating the condition of a telegraphic or analogous signaling line, consisting of a delicate magnetic needle suspended at one end in a non-magnetic frame or case secured to one of the coils of a main-line signaling-instrument, said frame or case being provided with one or more transparent sides through which the needle may be observed, substantially as described.

2. An indicator for correctly indicating the condition of a telegraphic or analogous signaling line, consisting of a delicate magnetic needle adjustably suspended at one of its ends in a non-magnetic case or frame secured to one of the coils of a main-line relay or signal-

ing-instrument, said case being provided with one or more transparent sides through which the position of the needle may be seen, substantially as described.

3. An indicator for correctly indicating the condition of a telegraphic or analogous electrical circuit, consisting of a delicate magnetic needle adjustably suspended from one of its ends in a non-magnetic frame provided with one or more transparent sides and secured to one of the coils of a main-line relay or signaling-instrument by an adjustable band or strap, substantially as described.

4. An indicator for correctly indicating the condition of a telegraphic or analogous signaling circuit, consisting of a delicate magnetic needle M, adjustably suspended from one of its ends in a non-magnetic frame E, having transparent sides G, said frame being secured to one of the coils of a main-line relay or signaling-instrument by an adjustable band or strap D, substantially as described.

MARION A. DEUEL.

Witnesses:

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