

UNITED STATES PATENT OFFICE.

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ELECTRIC SIGNALING APPARATUS.

No. 870,102.

Specification of Letters Patent.

Patented Nov. 5, 1907.

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To all whom it may concern:

Be it known that I, FELIX BENEDICT HERZOG, Ph D, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a new and useful Improvement in Electric Signaling Apparatus, of which the following is a specification.

My invention relates to a circuit closer, which when closed, will produce changes in the normal circuit conditions at its station, which changes will continue until some act is performed at a distant point.

Referring to the drawings such a circuit closer is shown in connection with the complete circuit and apparatus at the distant station.

In the form chosen for illustration, an armature is designed to be positively moved into position to cooperate with a suitable circuit terminal to close the main circuit. Within this circuit there is located a magnet, at the operated station and at other points on the line are located the sources of current, a suitable indicating device and means for breaking the circuit.

Referring to the drawing, K''' represents a push button adapted to be depressed into position to rock the armature on its fulcrum so as to bring the contact and the pin carried by it against the contact point T°. The circuit thus produced leads from battery L^a, through suitable alarm D^a, through suitable key 1^a, through circuit 20, armature, contact point, wire 25, magnet, wire 18, and back to battery. The result is that the circuit will remain closed until it is momentarily broken at the distant point. This is done by a momentary depression of the key 1^a, thereupon the armature is drawn back by its spring and the circuit is broken. Normally, the armature will make contact with T° and the earth return, being thus held by its spring.

The mechanism so far described is fully effective, and for many purposes is complete; but I produce additional results of value by combining this apparatus with means whereby another circuit or part of circuit is rendered operative in the normal condition and position of the armature. This may be done in various ways, and as shown herein, there is a back contact T°, which leads to a branch within which is another magnet k, adapted to produce any desired result. This branch leads back by some suitable return, herein shown as the earth, with a corresponding earth branch at the distant station. The magnet k is obviously operated when the key at the distant station is moved from its normal contact to the abnormal

contact, which throws in the second battery and the return.

There are many modifications which I have shown in the present application as originally filed and various other applications, and I do not wish to confine myself to the form shown herein, excepting to the extent that the movement of the armature is at the first step controlled mechanically as the direct result of the push.

What I claim is:—

1. A circuit controlling device comprising circuit terminals, arranged and adapted to be brought into contact after an armature has begun to be moved mechanically from its normal position of rest, together with this armature; a magnet cooperating with this armature to continue the change in the circuit conditions established as the result of such contact; means under the control of an operator for moving the armature mechanically away from its normal position of rest; means, including a suitable source of current and connection, by which the current is enabled to flow through both the magnet and the said terminals only after the armature has been moved mechanically, as described; and means controlled from a distant point and cooperating to restore these parts.

2. At a signaling station a circuit controller which when operated at will by an operator thereat causes the armature of an electro-magnet to be moved; means whereby said movement changes the course of one or more neighboring parts of the circuit to a distant station; combined with a normally open pair of terminals for said circuit substantially as described.

3. At a signaling station a circuit controller which, when operated at will by an operator causes the armature of an electro-magnet to be moved; means whereby such movement changes the course of one or more neighboring parts of the circuit to a distant station, including in its operation the establishment of a circuit closed through the magnet, and remaining closed until some subsequent operation at the distant connected station; together with means for re-opening such closure independently of subsequent act by the signaling operator.

4. In combination with two lines in parallel from a sub-station to a central station, a circuit closing device at the sub-station signaling station, adapted and arranged to produce a circuit change which sends an alarm to the central station; means for continuing this circuit change without further action on the part of the operator, and a magnet at the sub-station controllable from the central station only after the signal has been received thereat and operating to restore the normal conditions, substantially as described.

5. At one station a signaling instrument including terminals to a circuit leading to a distant station; means for joining these and thereby giving the signal, a magnet cooperating in this operation, and an armature for the magnet constructed and arranged to be moved mechanically during the operation of giving the signal.

6. In signaling apparatus the armature of an electro-magnet cooperating with contact points to act as a top or

bottom contact key, or two ways switch; said points both cooperating with the main circuit to the second station; means for causing the armature to cooperate with the abnormal contact, and devices at a second station whereby
5 the normal condition is restored; substantially as described.

7. In a call box telegraph, a call answering signal, an electro-magnet normally deenergized but energized when said answering signal is moved to inoperative position,
10 and adapted to hold said signal inoperative and to release said signal when said magnet is deenergized, and means

for moving said signal to inoperative position by the sending of calls, substantially as described.

In testimony whereof, this specification is signed in the presence of two witnesses on this 11th day of July 1889. 15

F. BENEDICT HERZOG.

We, the witnesses referred to, sign our names on the same date.

CHAS. E. ANDERSON,
ARTHUR WILLIAM HOPKINS.