

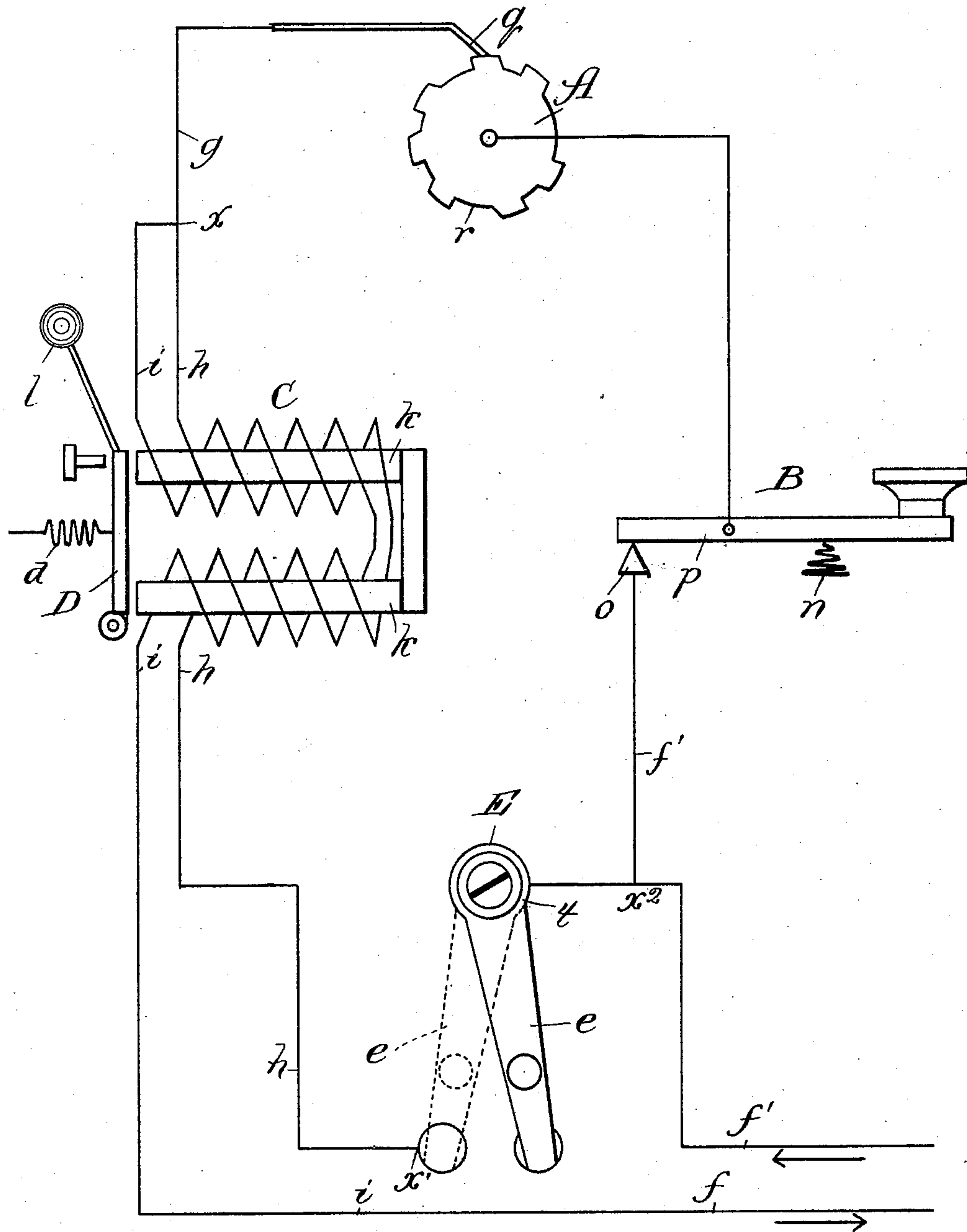
(No Model.)

J. F. MEHREN.

MEANS FOR TESTING ELECTRIC SIGNAL BOXES.

No. 523,798.

Patented July 31, 1894.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## MEANS FOR TESTING ELECTRIC SIGNAL-BOXES.

SPECIFICATION forming part of Letters Patent No. 523,798, dated July 31, 1894.

Application filed November 24, 1893. Serial No. 491,827. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB F. MEHREN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Means for Testing Electric Signal-Boxes, of which the following is a specification.

My invention relates to an improvement in the class of electric signal-boxes, such as are used for fire-alarm purposes, and which are commonly connected, in any desired number, in a closed-circuit line with any number of signal-receiving stations. These signal-boxes are not, ordinarily, operated with sufficient frequency, in their functional capacity, to insure their operativeness in case of need, and therefore are liable to become rusty and sticky as the effect of exposure and non-use. For this reason it is necessary to try or test the boxes periodically. The ordinary method of testing such a signal-box is to operate it and cause it to transmit its signal to all the receiving-stations on the circuit. This, however, is objectionable, because it creates disturbance at the receiving stations and is liable to be mistaken there for a bona fide signal; and, besides, such a trial-signal is liable to interfere with a bona fide signal, while such is being given.

The object of my invention is to provide for thoroughly and reliably testing such signal-boxes without incurring the objectionable consequences referred to.

To accomplish my purpose I have devised the means illustrated in the accompanying drawing, and represented, diagrammatically, in conjunction with devices commonly employed in a fire-alarm signal-box.

A denotes a well-known form of signaling device, composed of a toothed wheel  $r$  and a spring contact-finger  $q$ , the wheel being connected, as usual, with suitable rotating mechanism (not shown), which is set in motion to produce a regular fire-alarm signal.

B denotes an ordinary telegraphic key, having a lever  $p$  and an anvil  $o$ , with which the lever is held normally in contact by a spring  $n$ . This key is provided to be used for special signaling.

C represents a telegraphic, or bell, relay, and is shown with a pivotal armature D carrying a hammer  $l$ . The relay serves to sound,

within hearing of the sender, any signal he may transmit. The cores  $k$  of the relay are wound with at least two magnet-wires  $i$  and  $h$ , which should be wound parallel in corresponding directions and each with the same number of turns. One end of the relay-wire  $h$  is connected at the point  $x$  with the relay-wire  $i$  and wire  $g$  leading from the finger  $q$ , and the other end is connected, at  $x'$ , with a switch E. The pivot  $t$  of the switch is connected at  $x^2$  with the wire  $f'$ , which latter and the wire  $f$  represent the line-wires leading to and from the signal-box, the direction of the current being indicated by arrows.

The operation is as follows: With the lever  $e$  of the switch in the normal position in which it is represented by the full lines, the key B, signaling device A, and the relay C through its wire  $i$ , are in closed circuit with the main line. In this condition the relay is energized by the current through the wire  $i$ , and the armature D is attracted. Operation of either the key B or the signaling device A will make and break the line-current; and the signaling thus produced is transmitted to all the stations on the line, the armature of the relay responding thereto. If, now, it be desired to test the operation of the box without causing the signals to be transmitted to any of the stations on the line, the switch-lever  $e$  is turned to the point  $x'$ , in which position it is indicated by the dotted representation, where the switch completes a branch-circuit comprising the wire  $h$  of the relay between the point  $x$  and  $x^2$ . As the resistance between the said points, through the key B and signaling device A, is practically zero, the branch-wire  $h$  is perfectly shunted and no current will pass through it; and consequently the relay C will remain unaffected. But if the key be depressed, or the signal-wheel  $r$  turned out of contact with its finger  $q$ , the current will pass, by way of the point  $x^2$  and switch E, through the wire  $h$  of the relay to the point  $x$  and return by the wire  $i$  of the relay to the line.

It is obvious that the direction of the current passing by the wire  $i$  will be opposed to that on the wire  $h$ ; and as both wires have an equal number of turns about the cores  $k$  the magnetizing effect on the latter will be neutralized and the armature D unattracted and withdrawn by its spring  $d$ , with the same



effect as though the current were interrupted in the ordinary manner.

When contact is re-established at the respective signaling device, the current is again  
5 shunted from the relay-wire *h*, and the cores *k* will be magnetized by the current on the wire *i*, and again attract the armature. The signals thus produced, however, are not transmitted to the line and stations thereon, the  
10 only effect on the line-circuit being alternate introduction into and shunting out of it the resistance of the wire *h* of the relay; and as the resistance in the branch-circuit is comparatively small, the line-current, and consequently the receiving instruments thereon,  
15 will not be perceptibly affected. It will, therefore, be clear that all of the electrical, as well as the mechanical, conditions of the signal-box may be tested at the box without disturbing the normal condition of the main-line circuit. After having made the desired test of the signal-box, the switch *E* is again set in its normal position; which act may, if desired, be accomplished automatically by a proper

connection of the switch with the door, for the 25 purpose.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an electric signaling-box, the combination with a main-line circuit containing a 30 signaling device and a relay, of a branch-circuit containing a portion of the wire-windings of the relay, said branch-circuit being adapted to be connected into and out of shunt with the signaling device.

2. In an electric signaling-box, the combination with a main-line circuit containing a 35 signaling device and a relay, of a branch-circuit containing a portion of the wire-windings of the relay and a switch, the switch being 40 operative to connect said branch-circuit into and out of shunt with the signaling device, substantially as described.

JACOB F. MEHREN.

In presence of—

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