

(No Model.)

J. F. MEHREN.

AUTOMATIC CUT-OUT FOR ELECTRIC SIGNALING MECHANISMS.

No. 494,787.

Patented Apr. 4, 1893.

Fig. 1.

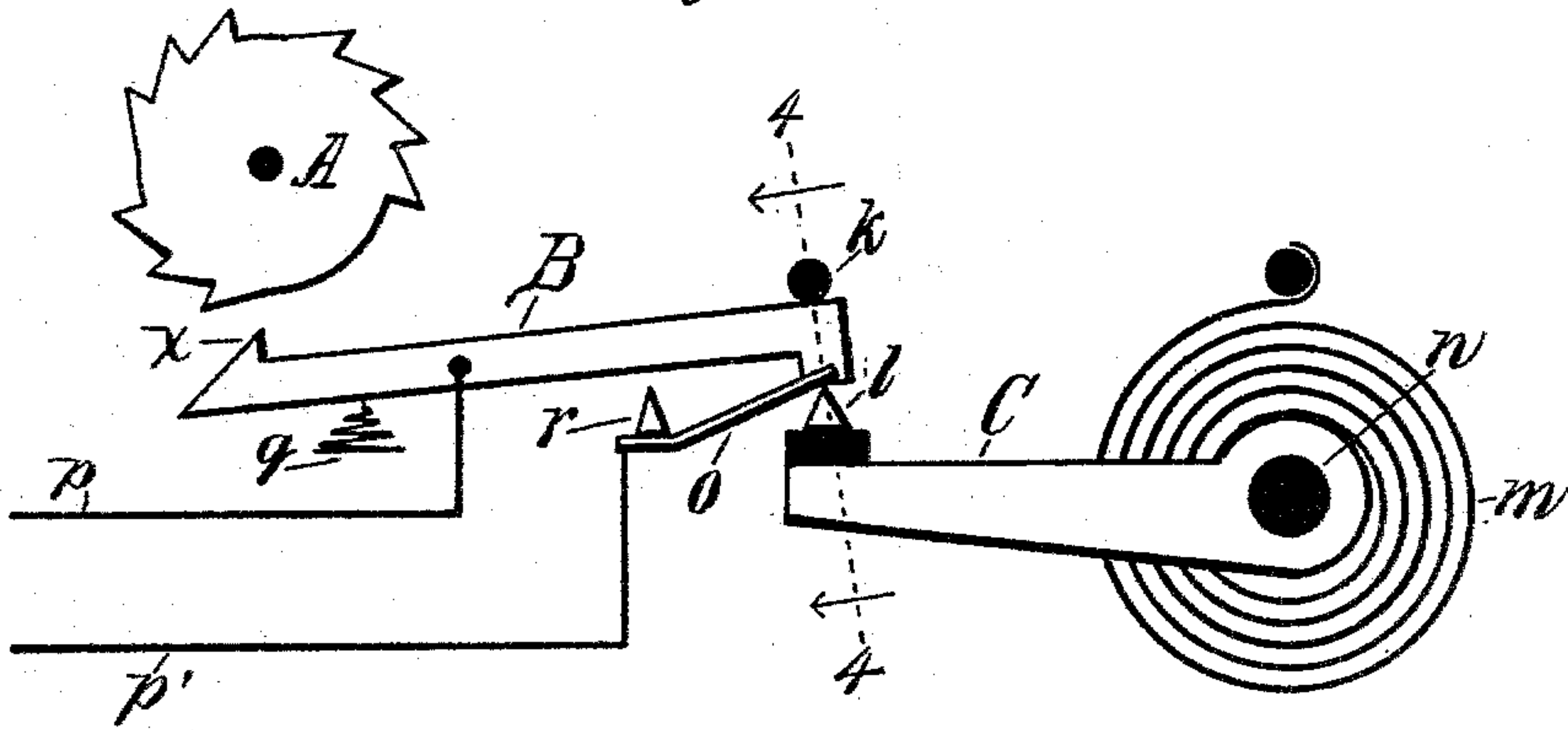


Fig. 2.

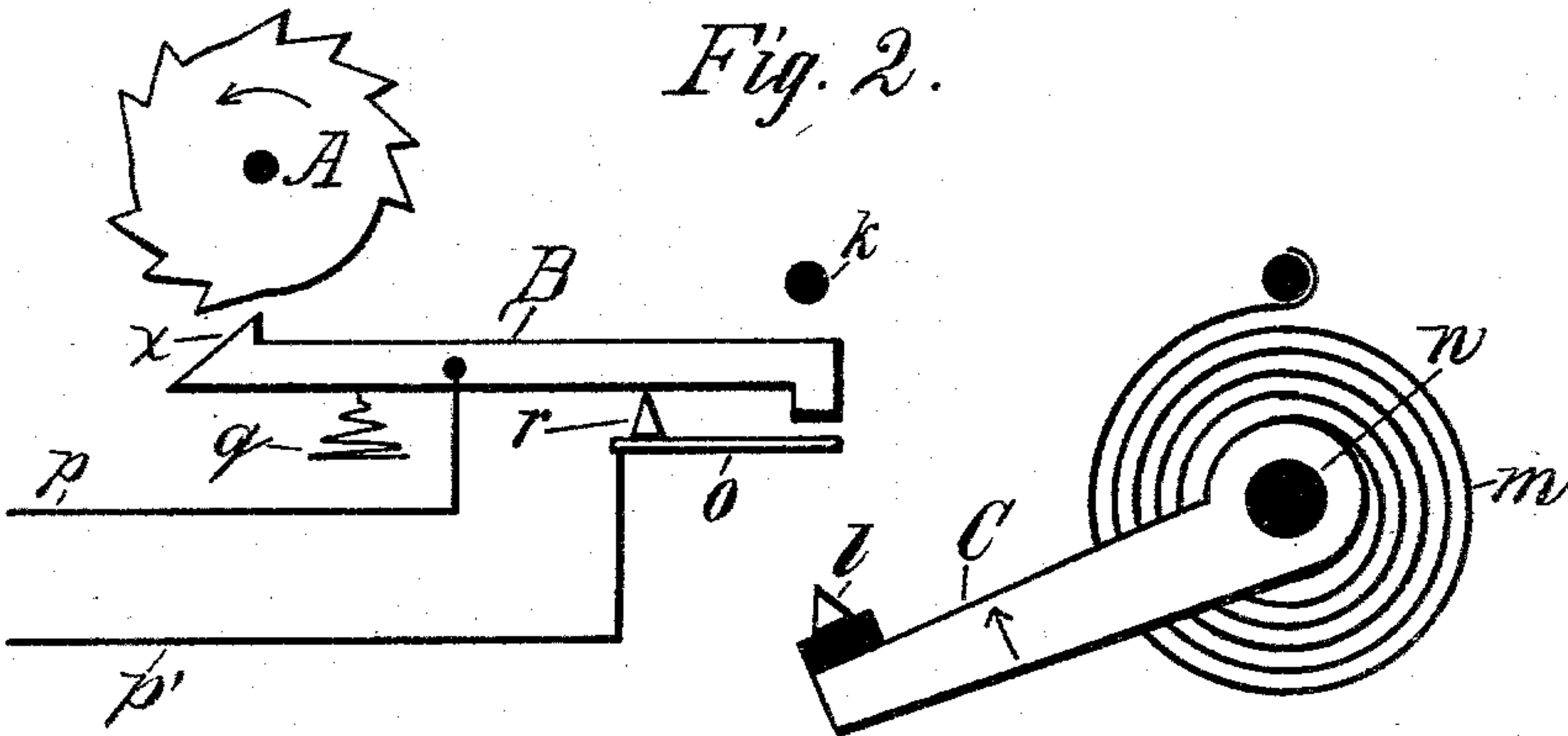


Fig. 3.

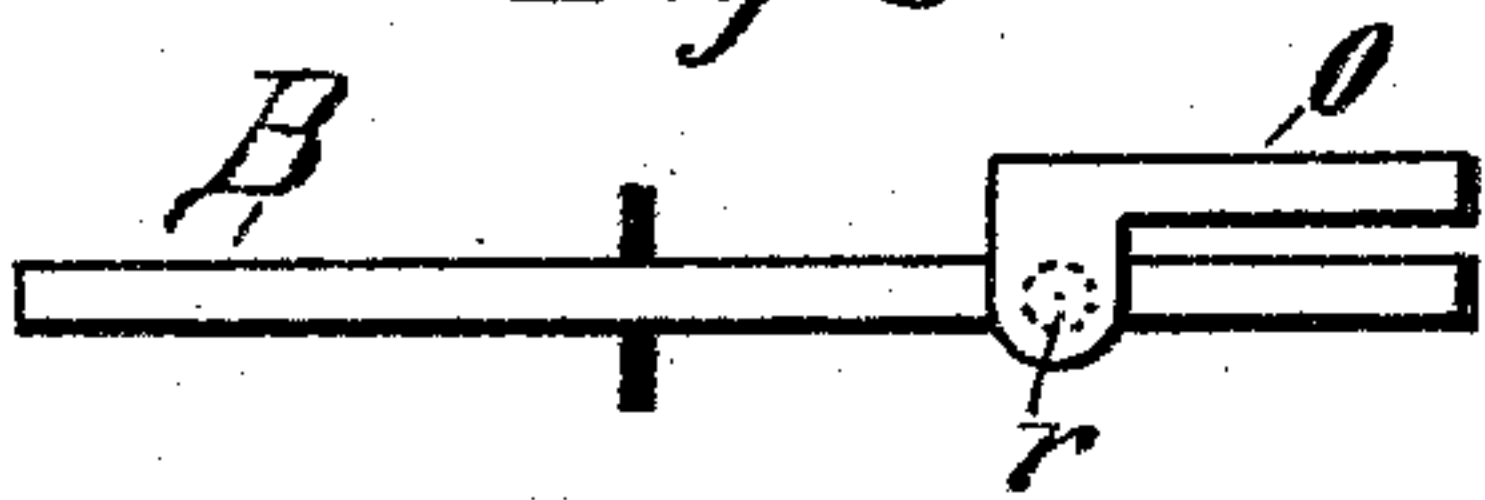
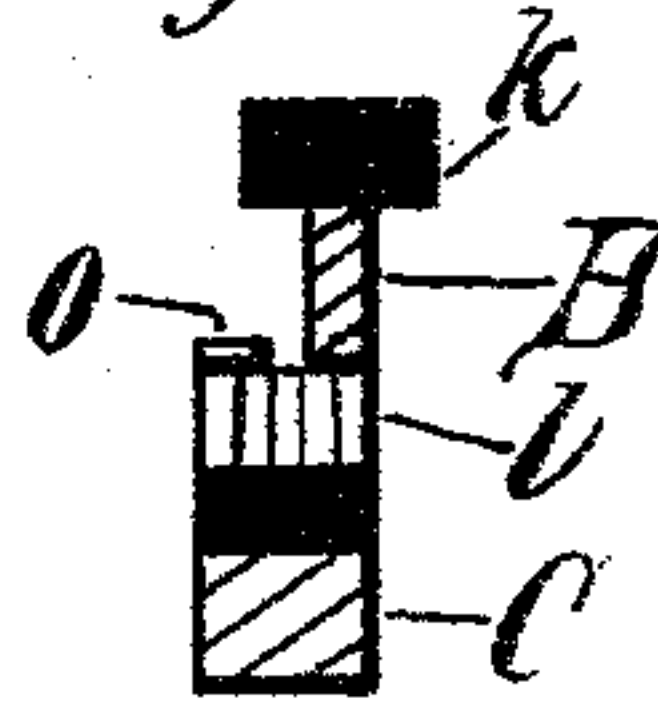


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

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AUTOMATIC CUT-OUT FOR ELECTRIC SIGNALING MECHANISMS.

SPECIFICATION forming part of Letters Patent No. 494,787, dated April 4, 1893.

Application filed January 8, 1892. Serial No. 417,416. (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 Automatic Cut-Outs for Electric Signaling Mechanism, of which the following is a specification.

My invention relates, more particularly, to an improvement in the class of automatic signal-boxes, such as the boxes for fire-alarm and police-alarm service.

A box of the class referred to commonly contains a signaling-wheel rotated by a train of wheels actuated by a spring or weight and operated either by releasing the spring or weight, when it has been previously set, or by setting the same by turning or pulling a suitable lever connected with the winding shaft. The wheel-detail of the signal-producing device referred to represents only one of several forms thereof that may be used for my purpose. Whatever the form used, however, great difficulty is experienced in protecting the signaling-device against being impaired or disabled by lightning, or other abnormal currents. Hitherto it has been common to employ a shunt operating automatically to shunt the signaling device out of the circuit after it had been actuated to produce a signal; but such shunt has not, owing, probably, to imperfect contact, been effective in preventing lightning and other abnormal currents from passing through the signaling device and injuriously affecting it, either by fusing together the points of contact or burning them off, in either case destroying the further usefulness of the device. Another difficulty has been experienced from the same cause to the extent of so fusing the shunt as to prevent it from letting the signaling device into the circuit in operating the box.

My object is to provide an automatic cut-out which will serve to effectually overcome the difficulties referred to.

For the sake of convenience I have selected, for illustrating my invention, a "key-break" signaling device provided with my improvement and including a main-spring shaft and spring for actuating the signaling-wheel

through a train of clock-gear (not shown), the parts represented being shown in the relative positions they would occupy in a box, though the latter is not shown, being unnecessary to an understanding of my improvement.

Referring to the accompanying drawings—Figure 1 shows the apparatus involving my improvement in side elevation with the parts in their relative positions when the apparatus is in its normal condition, or at rest. Fig. 2 is a similar view, but showing the parts in their relation to each other when the apparatus is operating. Fig. 3 is a bottom plan view of the key-lever and contact-spring below it. Fig. 4 is a section taken on the line 4—4 of Fig. 1 and viewed in the direction of the arrows.

A is a signal-wheel, preferably of insulating material and formed with sets of peripheral teeth according to the particular signal the wheel is designed to produce by engaging, in its rotation, the hook-end x of a "key-break" lever B, to depress the latter and thereby break its contact with a point r to which the main-line wire p' leads, the other main-line wire p leading to the lever, as shown. Between successive depressions of the key-lever B, it is brought into contact with the point r by the resilient action of a spring q . There is attached to the key-lever contact r a spring o , supported to extend, with relation to the key-lever B, as represented in Fig. 3.

C is an arm secured at one end to a rotary shaft n carrying a spring m , adapted to be set to actuate the clock-gear (not shown, but hereinbefore referred to) to rotate the signal wheel A; and at the opposite end of the arm C is a contact-bar l adapted to contact with the spring o , and, eventually, also with the lever B.

As represented in Fig. 1, the apparatus is at rest, in its normal condition. The arm C, owing to the normal tension of the spring m , is held, at its contact-bar l , against the spring o and lever B, thereby maintaining the latter in its elevated position, the limit of which is determined by a rigid insulated stop k . As will be seen, in this position of the lever B it is out of contact with the point r , and the circuit is completed by way of the bar l , from

the lever B, to the spring *o*. If, now, it be desired to operate the signal-box, the arm C is turned downward to the position in which it is represented in Fig. 2, for which purpose a
 5 crank (not shown) may be provided on an end of the shaft *n*; and thus turning the arm C likewise winds up the spring *m*. In this last-named position of the arm C, the spring *q* exerts its resilient force to hold the key-lever
 10 B against the contact *r*, whereby the hook-end *x* of the lever is brought into the plane of the signal-wheel to be vibrated by the rotation of the latter, which takes place (in the direction indicated by an arrow) on releasing
 15 the arm C, when the tension of the spring *m* returns it (in the direction indicated by the arrow upon the lever in Fig. 2), eventually to the position illustrated in Fig. 1, wherein it again raises and holds the lever B away from
 20 the contact *r*, by bending upward the spring *o* toward its free end till it strikes the lever, and causes the circuit thus switched to be completed from the lever to the wire *p'* through the spring *o*.
 25 From the foregoing description it will be apparent that when the apparatus is in the condition represented in Fig. 1, any abnormal currents conveyed over the main-line can not pass through the signal-making points B and
 30 *r* and destroy them, they being separated; and that such currents will pass by way of the connecting-bar *l* from the lever B to the spring *o*. And it will furthermore be apparent that, should currents, abnormal by reason
 35 of their strength or of an imperfect contact, fuse the lever B and spring *o* to the bar *l*, no immediate or subsequent failure to operate on the part of the signaling device would ensue, because pulling or turning down the arm
 40 C to operate the box, will readily break the fusion and free the key-lever B to enable it to be actuated by the signal-wheel A.

It will be noticed that, according to the construction shown and described, the first
 45 effect of the contact of the bar *l* with the spring *o* is to shunt the circuit previous to switching it, which shunting, however, is a mere incident and not a necessary though sometimes a desirable function. My purpose
 50 is, by the return-action of the arm C, to switch the circuit and maintain, normally, the contacts *r* and B separate, whether the shunting takes place or not; and for my purpose it need not, so that the construction may be
 55 such as immediately to effect the separation of the contacts *r* and B and thus the switch-

ing of the circuit without preliminarily shunting it.

My improvement may be employed advantageously with any of various forms of electric signal-making devices, and I do not, therefore, limit it to the particular connection in which I have shown and explained it; nor to the exact details shown and described, which may be variously modified without thereby
 65 departing from my invention.

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

1. A signaling device for an electric signaling-box, having in its circuit separable switch-
 70 contacts and separable signal-contacts, and a member operating directly on the switch-contacts to maintain them normally in mechanical contact with each other and operating directly on the signal-contacts to main-
 75 tain them normally out of mechanical contact with each other, whereby a circuit is normally established around the signal-contacts, substantially as described.

2. In a signaling-device for an electric signaling-box, the combination with the signal-
 80 wheel A and its actuating mechanism, of a lever B held, in the normal condition of the device, out of engagement with the said wheel and permanently in the circuit, a spring *o*
 85 maintained normally in the circuit by the said actuating mechanism, and a contact *r* for the said lever introduced into the circuit by operating the said actuating mechanism and successively shunted in and cut out of the
 90 circuit by the rotation of the signal-wheel, substantially as described.

3. A signaling device for an electric signaling-box comprising, in combination with the
 95 signal-wheel A and the spring-controlled shaft *n* of its actuating mechanism, an arm C on the shaft, having a contact-bar *l*, a lever B permanently in circuit and held, in the normal condition of the device, out of engage-
 100 ment at one end with the said wheel and extending, at its opposite end, into the path of the bar *l*, a contact *r* in the circuit and from which the lever is normally maintained separated by the said bar, and a spring *o* in the
 105 circuit and extending into the path of the said bar, the whole being constructed and arranged to operate substantially as described.

JACOB F. MEHREN.

In presence of—

M. J. FROST,
 W. N. WILLIAMS.