

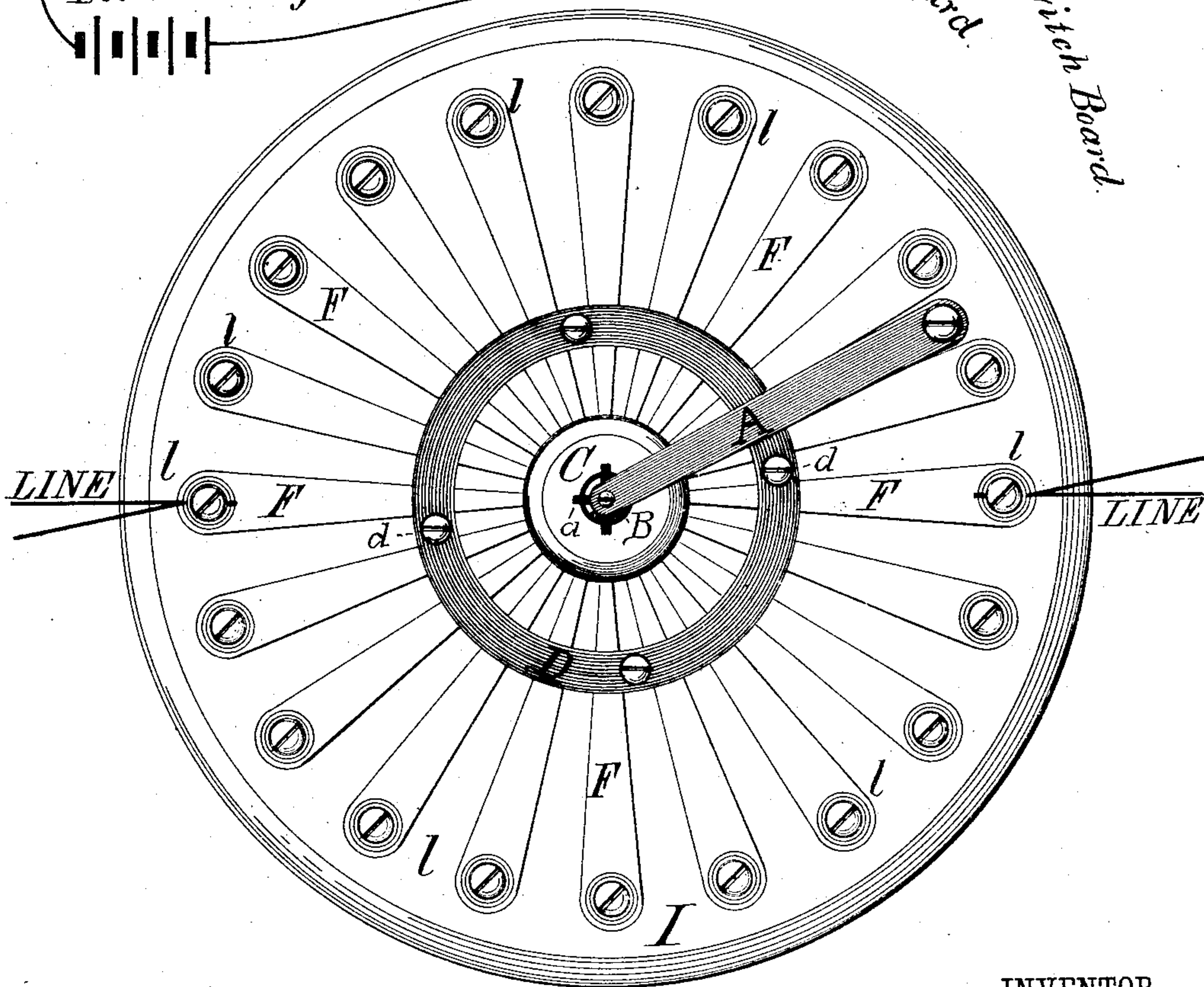
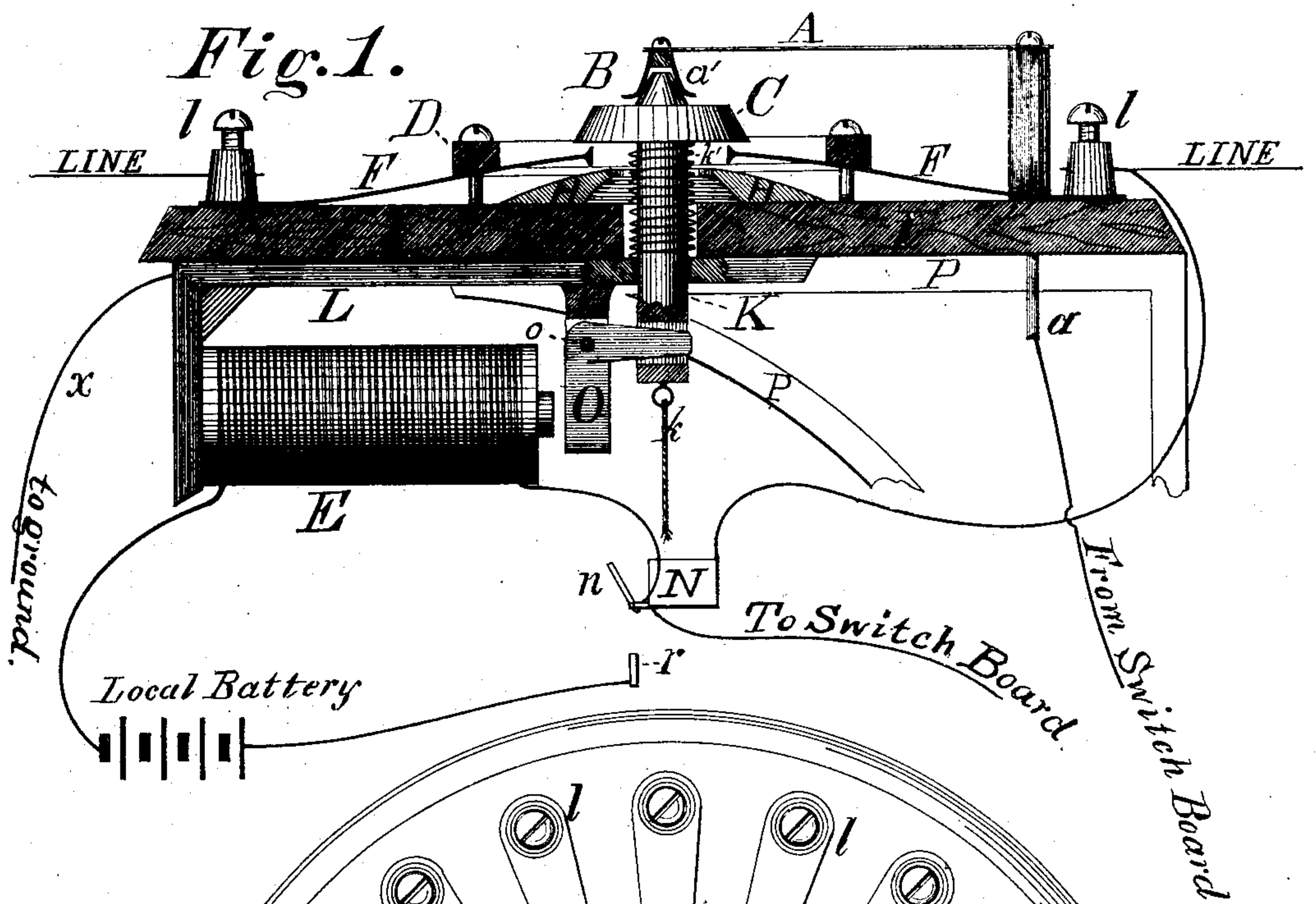
(No Model.)

J. B. MAY.

AUTOMATIC CUT-OUT FOR ELECTRIC CIRCUITS.

No. 313,091.

Patented Mar. 3, 1885.



WITNESSES:

A. S. Keith
T. C. Martin

Fig. 2.

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AUTOMATIC CUT-OUT FOR ELECTRIC CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 313,091, dated March 3, 1885.

Application filed May 6, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. MAY, of Watertown, in the county of Jefferson and State of Wisconsin, have invented a new and useful improvement in electric cut-outs, or automatic protectors for electric lines from injury of instruments therein by abnormally strong currents of electricity from atmospheric causes or from contact with electric-light conductors; and I do hereby declare that the following is a full and exact description of the same.

The object of my said invention is to provide an automatic grounding apparatus for any desirable number of electric wires entering a telegraph-station, telephone-exchange, or other place which may need protection from lightning-discharges from the lines, one or more of them, or from abnormal currents derived from electric-lighting circuits coming in contact with the lines.

The invention consists in providing means whereby such abnormal currents, when they commence to flow, effect the closing of a local battery circuit, including an electro-magnet, which is thus energized to attract and move an armature and mechanism attached thereto into such electrical contacts as are necessary to ground the wires and cut out the annunciator-coils or other apparatus before they can be injured by the abnormal current.

It also consists in means whereby the grounding may be effected by parts of the apparatus which are operated manually at desired times.

Reference is made to the accompanying drawings, in which Figure 1 is a vertical cross-section of one form of my apparatus, and Fig. 2 is a plan view of the same.

Like letters on the two figures refer to like parts.

P is one of two brackets attached to a wall of the house or room, or to other suitable support. On these brackets is placed the circular base I, of wood or other insulating material. On this base, on a concentric line near its periphery, are placed an indefinite number of binding-posts *l l l*, &c. The number may be sufficient to accommodate the number of electric lines the instruments in which are to be protected. These binding-posts are screwed

down upon an equal number of springs, *F F F*, &c., which are arranged radially on the disk, with their free ends pointing toward the center of the base, but ending under a metallic disk, C. This disk has a stem, K, on its under side and a conical projection, B, on its upper side. It is supported by the helical spring *k'*, with its cone against the contact-springs *a'* on the under side of the spring-conductor A. This last is in electric connection with the wire from the annunciator, switch-board, and other apparatus through the stem *a*. The ends of the springs *F F F*, &c., are kept at equal distances from the disk C by the ring D, of insulating material, and the necessary adjustment is effected by means of the screws *d d d d*.

Underneath the disk C, and below the ends of the springs F, is fastened the conical metallic ring H, which is in electrical connection with the bracket L. The bracket L is fastened to the under side of the base I, and carries on its vertical arm the electro-magnet E, which is in circuit with a local battery, as shown in Fig. 1. It also supports the armature O to the electro-magnet. The iron armature O of the electro-magnet is of L shape, and is pivoted at *o*, while its horizontal arm engages the stem K through a slot. When the armature O is moved toward the electro-magnet E, it pulls the disk C downward into contact with the free ends of the springs *F F F*, &c., and also these ends into contact with the ring H. The several line-wires are brought one to each binding-post C, and from there extended to the drop N of an annunciator, or of an apparatus which effects a movement of its parts to make a complete local circuit, as shown.

N is either an annunciator-drop magnet or one which only operates under abnormally-strong currents to set free its drop-plate *n*, which, when it drops, makes electric contact with the contact-block *r* to close the local circuit.

The operation of this apparatus just described is as follows: When an abnormally-strong current flows in the line through N, the drop *n* is freed and falls into contact with *r*. This action closes the local circuit through the local battery, contacts *r* and *n*, and the electro-magnet E, which attracts the armature O, so

that it pulls C downward by its stem K until it bears on the springs F F F, &c., and they bear upon the ring H. This movement breaks the ground-circuit which existed through a A
 5 a' B C K O L and its attached ground-wire x , and establishes a new one through from l to F, C and H, K, O, and L, to the ground-wire x , attached to L. Thus the drop-magnet N, annunciator, and other apparatus are cut out
 10 from the circuit and preserved from injury. Whenever desirable, this cut-out may be operated by hand by means of the cord k or its equivalent, and the cord fastened so as to preserve the desired positions of the parts; or the
 15 apparatus may be reversed, so that C hangs downward, and the parts shown in the drawings as on top be on the bottom and those shown on the bottom be on top, so as to avoid the use of the helical spring k' , the disk then
 20 preserving its normal position out of contact with the springs by gravity; or, in place of using the special drop-magnet N, which operates only under abnormally-strong currents, the usual annunciator magnet-drops may be
 25 made to close the local circuit at night or other times when protection is needed and the lines are not in use.

The apparatus may be placed in any part of the building, or even outside, and be controlled
 30 from within in obvious manner. It is especially valuable for offices that are left without an attendant during the night or at other times, and insures protection even in careless hands.

35 Having described my invention, I claim—
 1. In an electric cut-out, the combination of the spring branches F, the disk C, with stem

K, the spring k' , and the cord k , substantially as shown and described.

2. In an automatic electric cut-out, the combination of the spring branches F, the disk C, 40 with stem K, the lever O, and electro-magnet E, substantially as shown and described.

3. In an automatic electric cut-out, the combination of the spring branches F, the disk C, 45 with the stem K, the helical spring k' , the lever O, and the electro-magnet E, substantially as shown and described.

4. An electric cut-out having a circuit-maker common to branches from two or more 50 electric lines, in combination with means common to all the branches by which the distances between the contact-points of the branches and the circuit-maker may be adjusted at one operation. 55

5. An electric cut-out having a circuit-maker common to branches from two or more electric lines, in combination with a ring of insulating material in contact with all the branches, and which serves by its pressure 60 thereon to preserve a uniform distance between the contact-points of the branches and the circuit-maker.

6. The combination of the spring-contact branches F F, &c., with the ring D and means— 65 such as the set-screws d —for ranging the spring-contact branches in one plane by pressure of the ring D.

Witness my hand this 15th day of April, 1884.

JOHN BENJAMIN MAY.

Witnesses:

G. A. STALLMAN,
 H. WILLITZ.