(No Model.)

L. DAFT.

ELECTRIC CUT-OUT.

No. 431,035. Patented July 1, 1890.

Fig. 1.

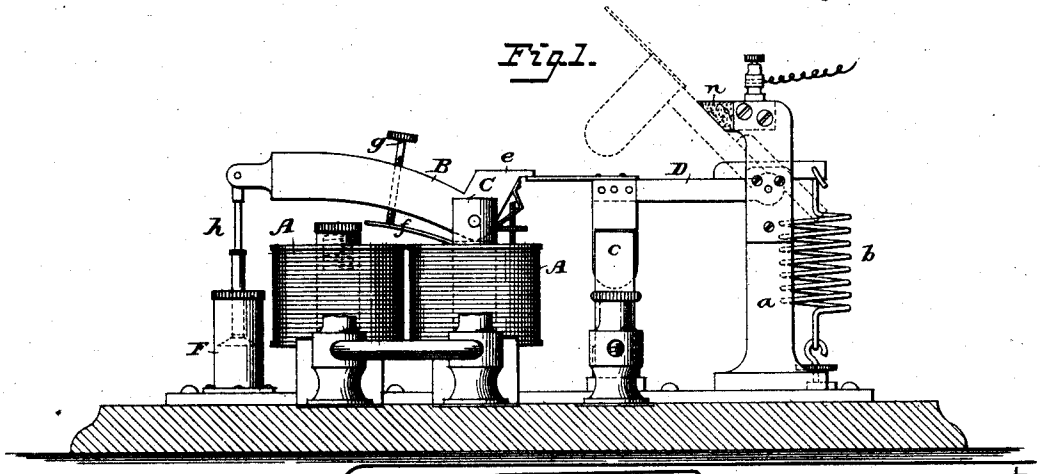


Fig. 2.

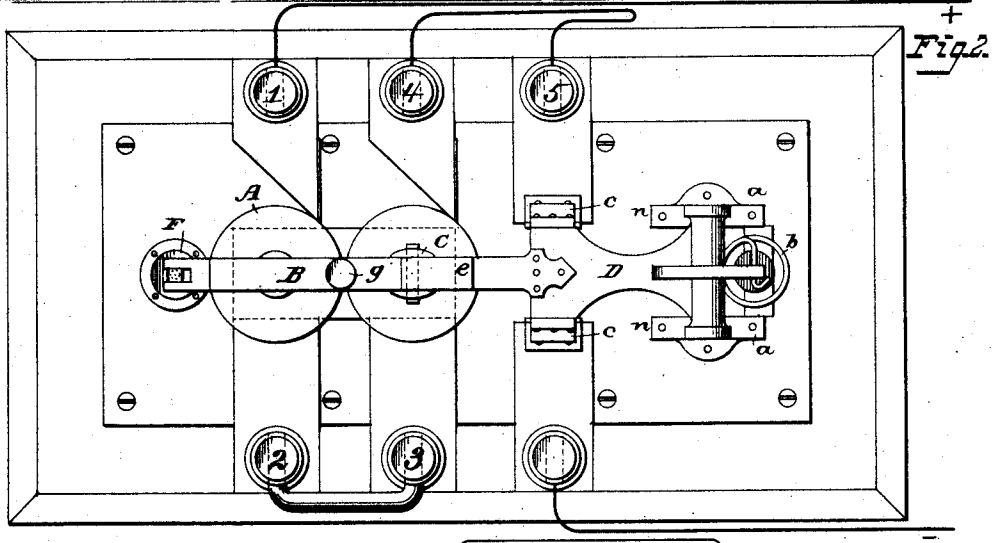
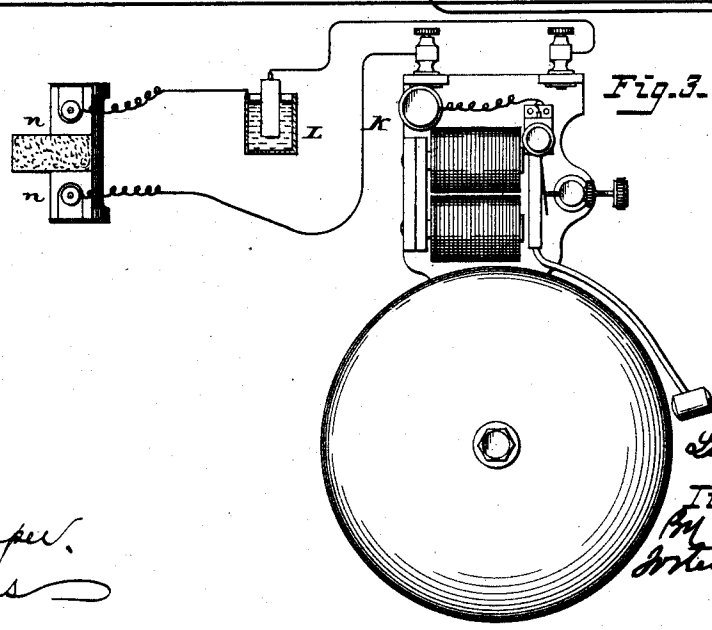


Fig. 3.



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UNITED STATES PATENT OFFICE.

LEO DAFT, OF PLAINFIELD, NEW JERSEY, ASSIGNOR TO THE DAFT ELECTRIC LIGHT COMPANY, OF NEW YORK, N. Y.

ELECTRIC CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 431,035, dated July 1, 1890.

Application filed October 16, 1885. Renewed May 4, 1888. Serial No. 272,859. (No model.)

To all whom it may concern:

Be it known that I, LEO DAFT, a subject of the Queen of Great Britain, and a resident of Plainfield, in the county of Union and State of New Jersey, United States of America, have invented certain new and useful Improvements in Electric Cut-Offs, of which the following is a specification.

My invention has for its object to prevent the accidents resulting from short-circuiting on lines or conductors used for transmitting currents for light or power purposes; and my invention consists in the improved combination of a circuit closer and breaker, a detent, and an electro-magnet included in circuit and actuating the detent to break the circuit whenever the current is abnormally strong, as fully set forth hereinafter, and as illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my improved cut-off device; Fig. 2, a plan of Fig. 1, the plate carrying the posts of the alarm-circuit wires being removed; Fig. 3, a detached view of the alarm-circuit device.

The main circuit is closed by a circuit-closer D, which may be of any suitable construction, and is shown in the form of a lever pivoted near one end between brackets or standards *a a*, a spring *b* being connected to the short end of the lever and tending to elevate it to the inclined position shown by dotted lines in Fig. 1.

When the circuit is closed, the circuit-closer or lever D is in a horizontal position in contact with terminals *c c*, in connection with the wires of the main circuit, which is thus completed through the said terminals and through the end of the lever or circuit-closer, and the latter is retained in its horizontal position normally by means of a catch or detent so connected as to be withdrawn in case of the main current being short-circuited.

Any suitable detent may be employed for holding the lever in position to close the circuit. In the construction as shown the detent is a lever B, pivoted to the pole-extension C of a suitably-wound magnet A, the said lever B being of iron or carrying a bar of iron, so as to constitute an armature, which is drawn down when the magnet A becomes excited, thereby withdrawing a lip *e* of the detent from over the circuit-closer D and releasing it, so as to allow it to rise. The lever B is held normally in the position shown in Fig. 1, with its lip engaging with and holding down the circuit-closer, being retained in this position by the action of a spring *f*, which bears against the lower end of an adjusting screw *g*, extending through the lever.

The device above described is arranged in the circuit including the dynamo or dynamos used for the distribution of electrical currents for power or light purposes from a central station, the magnet A being also included in the circuit, and the parts being so set and adjusted that so long as the external circuit is not short-circuited or only a normal current is flowing through the regulating device the parts will retain the position shown in Fig. 1; but should the current become abnormally strong for any reason the magnet A will be excited to such an extent as to draw down the lever B, and thereby release the circuit-closer, so as to open the circuit instantly to a sufficient extent to prevent the formation of an arc.

In order to prevent the circuit from being broken and the operation of the cut-off in case of a mere momentary harmless increase of current, I use a retarding device, which limits the speed of the movement of the detent. For instance, the armature-lever may be connected to operate any well-known retarding device. As shown, it is connected to the stem *h* of a piston arranged in a dash-pot F, whereby the lever is prevented from descending suddenly without interfering with its downward movement in case the action of the magnet A is prolonged.

With any of the movable parts above described I combine a signal device, which sounds an alarm or gives a visible indication whenever the circuit-closer is released. One form of such device is illustrated in the drawings, and consists of an ordinary electric bell in a circuit K, including a battery L and two separated blocks *n n*, against which the circuit-closer D is brought to bear when released from the detent, so as to close the circuit and sound the alarm.

The circuit may be traced as follows: Entering from the line at +, it passes to the binding-post 1, thence through one coil of the magnet A to the post 2, thence to post 3 and through the other coil of the magnet to post 4, thence to post 5, to one terminal *c*, and, if the circuit-closer is in normal position, through the same to the other terminal *c*, and onto line again through the wire. If the current becomes abnormally strong, the magnet is so energized that it draws down the armature B, releasing the circuit-closer D, which instantly flies back under the tension of spring *b*, breaking the main circuit at the terminals *c c*, and as it comes in contact with the terminals *n n* it closes the local circuit and gives the alarm.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

The combination, with a circuit-breaker pivotally secured at one end and engaging with the terminals, of a magnet in the circuit having one of its poles extended, a lever pivotally secured in said extension and provided at one end with a lip for engaging with the circuit-breaker and having a dash-pot at the other end, a magnet in the circuit for operating the lever, and a spring between the lever and the magnet, and an adjusting-screw in the lever intermediate its pivotal point and the dash-pot, one end of which engages with the spring, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEO DAFT.

Witnesses:
JNO. N. BRUNS,
F. HOLLY REED.