

(No Model.)

2 Sheets—Sheet 1.

T. HARDEN.
SAFETY DEVICE FOR ELECTRIC CIRCUITS.

No. 531,929.

Patented Jan. 1, 1895.

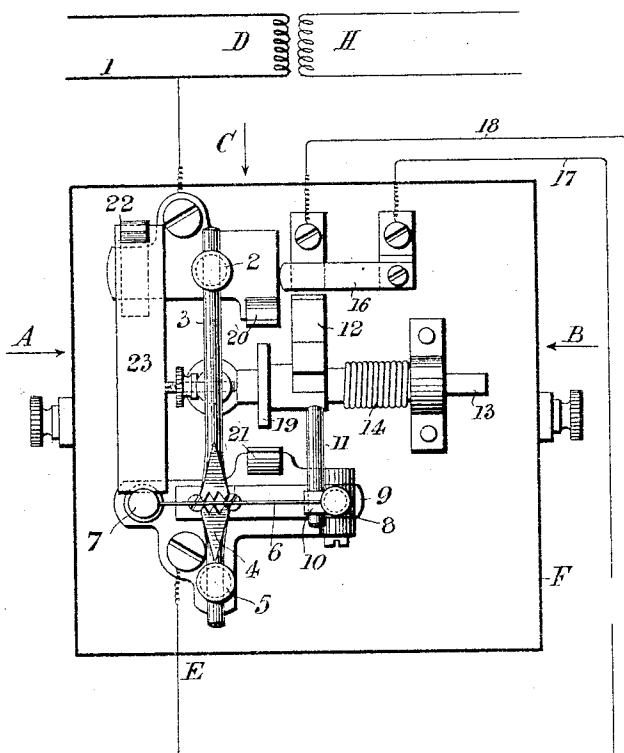


Fig. 1.

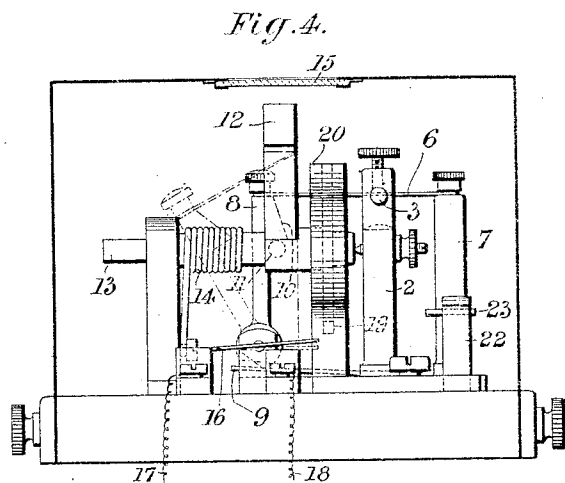
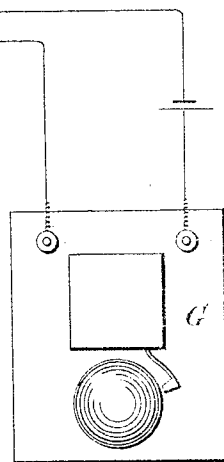


Fig. 4.



Witnesses.
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Albert J. Jones

Inventor.
Thomas Harden

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

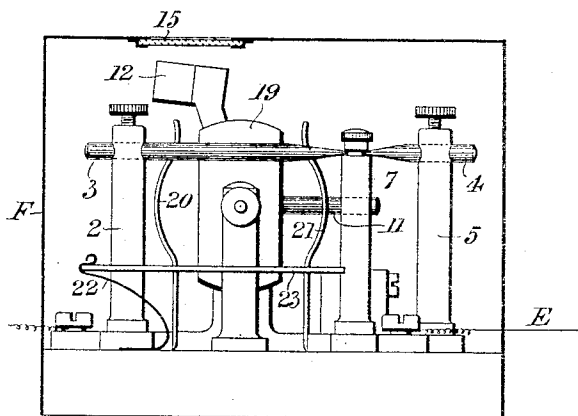
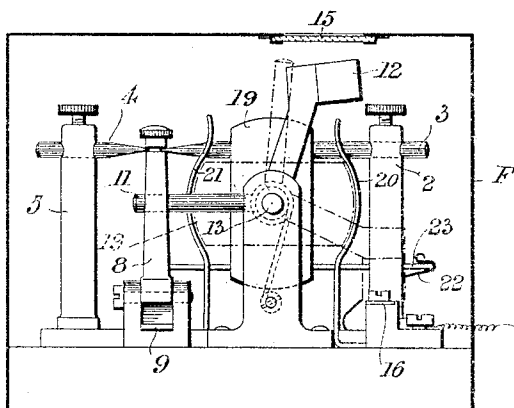


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS HARDEN, OF LONDON, ENGLAND.

SAFETY DEVICE FOR ELECTRIC CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 531,929, dated January 1, 1895.

Application filed April 27, 1894. Serial No. 509,219. (No model.)

To all whom it may concern:

Be it known that I, THOMAS HARDEN, a subject of Her Majesty the Queen of Great Britain, residing at Wimbledon, in the county of Surrey, England, have invented certain new and useful Improvements in Grounding or Safety Devices for Electrical Circuits, of which the following is a specification.

This invention relates more particularly to grounding or safety devices for use in cases where a high tension current is reduced through a transformer to a low tension current; but it will be seen from the description of the invention as hereinafter set forth that the device may be employed in connection with other branches of electrical work. When a high tension current is reduced to a low tension current by means of a transformer it is frequently desirable, if not absolutely necessary, that, should by any chance the high tension current pass to the low tension wires, the current should be conducted at once to earth and not pass through the low tension system. According to this invention it is proposed to effect this in the following manner, reference being made to the accompanying drawings which form part of this specification, and in which—

Figure 1 is a plan view of the apparatus with the cover removed. Fig. 2 is a side elevation looking in the direction of the arrow A the side of the cover being removed. Fig. 3 is a side view looking in the direction of the arrow B with the side of the cover removed and Fig. 4 is a view looking in the direction of the arrow C the side of the cover being removed.

Connected with the return, middle or balancing wire 1 of the low tension circuit D is the post 2 carrying an adjustable sparking arm 3 set opposite to an adjustable sparking arm 4 which through post 5 is connected to earth E. Between these two points on arms 3 and 4 is placed a fusible wire 6 one end of which is attached to post 7 and the other end to pivoted post 8 operated by spring 9. The post 8 carries a catch 10 which holds arm 11 of contact maker or indicator 12 mounted on shaft 13 against the action of spring 14, so long as the wire 6 is not fused, the indicator being, when set, in the position most clearly seen in full lines in Fig. 3, in which position

it can be seen through the sight opening 15 in the cover F that the apparatus is set and ready to act. When wire 6 is fused or if it breaks the action of spring 9 causes post 8 to fly back and catch 10, releases arm 11 so that indicator 12 is by a spring 14 drawn down to the position shown in dotted lines in Fig. 3 and presses down contact spring 16 (most clearly shown in Fig. 1) which completes a circuit 17 and 18 to a bell or indicator G. Shaft 13 also carries a contact arm 19 and as the shaft turns this arm makes contact between plates 20 and 21 which thus gives direct electrical connection between the low tension circuit 1 and earth E. To provide for static currents there is a permanent connection between the low tension system and earth by means of support 22 (Figs. 1 and 2) which carries a sheet of black leaded glass 23 or other material capable of carrying static currents to post 5 and thence it passes to earth.

The operation of the device is as follows, it being understood that so long as no high tension current passes from H directly to the low tension system D the parts remain in their locked position: If now a high tension current passes to the low tension system there is immediate sparking between the sparking arms 3 and 4. The arc formed between the points instantly fuses the fusible wire 6 when post 8 flies back and releases the spring catch 10 from arm 11 and the turning of shaft 13 causes the contact maker 19 to turn so as to make direct contact with plates 20 and 21 and thus between the low tension wire 1 and earth E and at the same time the indicator 12 completes the circuit 17 and 18 and operates the bell, or other signal G showing that the high tension current is passing to the low tension system, although instead of traversing same it will of course take the line of least resistance and pass directly to earth.

What is claimed is—

1. In a grounding or safety device for electrical circuits the combination of sparking points, a fusible wire, a catch mechanically held by said wire, a contact arm held by said catch, and contacts adapted to complete the circuit from a low tension system to earth, substantially as set forth.
2. In a grounding or safety device for elec-

trical circuits the combination with the sparking points and fusible wire, of a catch mechanically held by said wire, a contact arm, and contacts cooperating therewith, adapted
5 to put the low tension circuit to earth, and an indicator operated by the contact arm, adapted to complete a bell or like circuit, substantially as set forth.

3. In a grounding or safety device for electrical circuits, the combination of the sparking points, a fusible wire, a spring catch mechanically held thereby, an arm held by the catch, a shaft carrying said arm, and also a contact arm, contacts cooperating with the
10 latter, and an indicator, substantially as described.
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4. In a grounding or safety device for electrical circuits, the combination of the sparking points, a fusible wire, a spring catch mechanically held thereby, an arm held by the catch, a shaft carrying said arm, and also a contact arm, contacts cooperating with the latter, an indicator, and a bell or like circuit, adapted to be closed by said indicator as set forth.
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In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

THOMAS HARDEN.

Witnesses:

PHILIP M. JUSTICE,
ALLEN PARRY JONES.