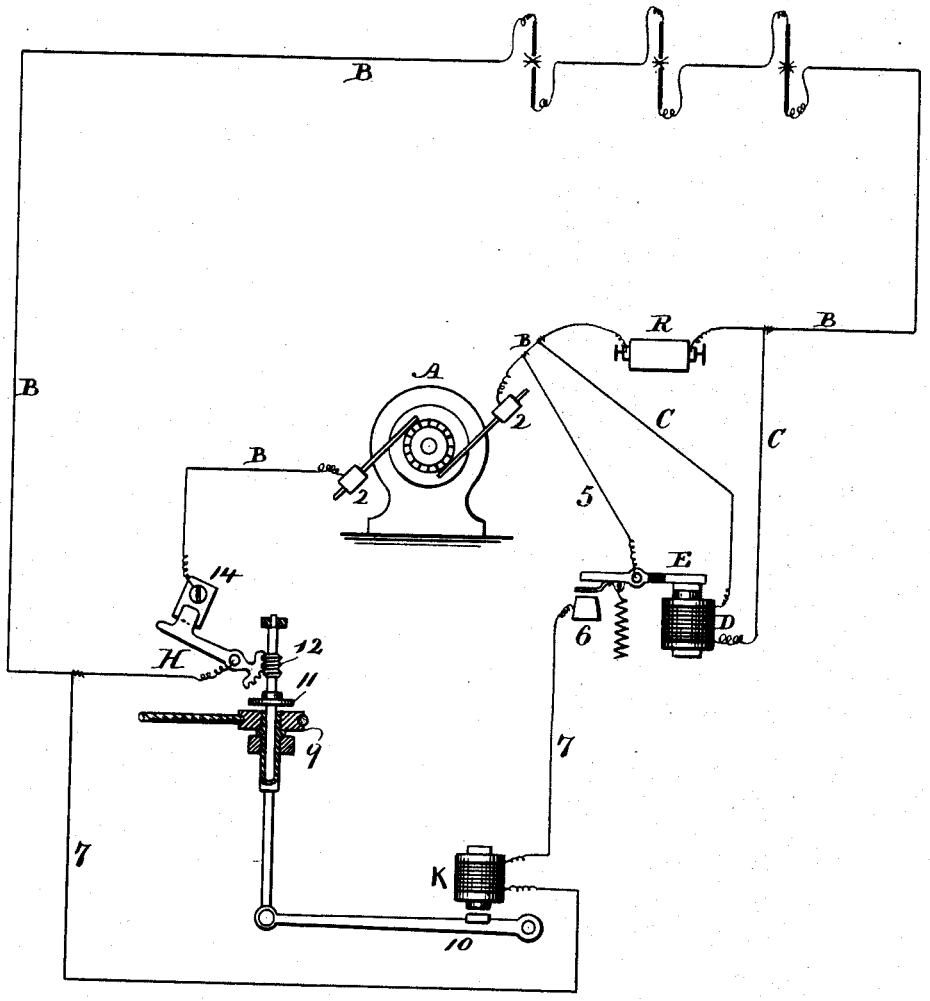
(No Model.)

G. M. GUERRANT.

AUTOMATIC SAFETY CUT-OFF FOR ELECTRIC CIRCUITS.

No. 420,198. Patented Jan. 28, 1890.



Witnesses
Chas. H. Smith
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Inventor
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UNITED STATES PATENT OFFICE.

GEORGE M. GUERRANT, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND H. A. WISE WOOD, OF SAME PLACE.

AUTOMATIC SAFETY CUT-OFF FOR ELECTRIC CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 420,198, dated January 28, 1890.

Application filed October 21, 1889. Serial No. 327,611. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. GUERRANT, of the city and State of New York, have invented an Improvement in Automatic Safety Cut-Offs for Electric Circuits, of which the following is a specification.

In electric circuits, especially those made use of for arc light, danger arises from the breaking of a circuit or wire, because, the dynamo or source of electric current continuing in operation, the current often passes through the ground or through other electric circuits with which the broken line-wire may come into contact.

The object of the present invention is to short-circuit the electric current as soon as any rupture occurs in the main circuit and bring into action mechanism that breaks the main circuit at the dynamo, thereby preventing injury to individuals or to other electric circuits, because the current is entirely cut off from the main line until the break can be repaired and the current again sent over the external circuit.

In the drawing I have represented my improvements by a diagram, in which A represents the dynamo or other electric generator, having the brushes 2 connected with the external or line circuit B, containing a resistance R, and there is a shunt-circuit C in the main-line circuit around said resistance, containing an electro-magnet D, the armature E of which forms a switch, and there is a branch 5 from the main line to the armature-switch E, and a contact-block 6 and branch circuit 7 to the main line B at the opposite side of the dynamo, and in the main line is a switch H, of any suitable character, and this switch is adapted to move by automatic mechanism—such, for instance, as a pulley 9—around which a belt passes, and is connected with the engine of the dynamo or other source of power, so that such pulley 9 is continuously rotated, and there is an electro-magnet K in the branch circuit 7, the armature 10 of which is adapted to press the pulley 9 into contact with a friction-plate 11 and cause the pulley 9 to rotate the screw-pinion 12 or other gearing and move the switch H. It will now be understood that in the normal position the switch H is in contact with the block 14, and the current from the dynamo A passes by the brushes 2 2 upon the main line or external circuit B and through the lamps, motors, or other devices that are electrically actuated, and the current also passes through a switch H and contact-block 14. So long as the main line B is charged there will be a current flowing through the shunt C, which will be in proportion to the resistance R, and the electro-magnet D will remain energized and hold the armature-switch E out of contact with the block 6. The moment, however, the external circuit B may be broken at any point, the electric current will cease to flow through the shunt-current C, and the automatic switch E will close to the contact-block 6, and the electric current will pass through the branch 5, switch E, block 6, circuit 7, and electro-magnet K and switch H to the dynamo, and thereby the magnet K will be energized, and its armature 10 will press the pulley 9 into contact with the plate 11, so that such plate will be rotated by the frictional contact therewith of the revolving pulley 9, and the mechanism or gearing driven by the pulley 9 opens the switch H mechanically, causing it to break contact with the block 14, and instantly the circuit 7 is broken and the main circuit is interrupted at the switch H, so that no current can go out upon the main line, thus avoiding any risk from ground currents or otherwise upon the main line or external circuit. As soon as the break or injury to the main line is repaired and the switch H brought into contact with the block 14, the current passes upon the external circuit, and through the shunt-circuit C and the electro-magnet D attracts the armature-switch E, breaking contact with the block 6, so that the magnet K is thrown out of circuit, and so remains until a break may occur in the main or external circuit B.

Any suitable mechanism acted upon by an electro-magnet K in the branch circuit may be made use of in opening the switch H.

I claim as my invention—

1. The combination, with a dynamo or electric generator and the external circuit B, of the shunt-circuit C, electro-magnet D, armature-switch E, and the branch circuit 5 6 7, closed by the armature-switch E, the electro-magnet K in the branch circuit, a continu-

ously-revolving mechanism brought into action by friction induced by the magnet K, and a switch in the main circuit acted upon by the revolving mechanism to break the circuit, substantially as set forth.

2. The combination, with a dynamo or electric generator and the external circuit B, of the shunt-circuit C, electro-magnet D in such shunt, the armature-switch E, the branch circuit 5 6 7, closed by the armature-switch E, the electro-magnet in the branch circuit, and continuously-revolving mechanism brought into action by the electro-magnet in the branch circuit, and a switch in the main circuit acted on by such mechanism for breaking the main circuit, substantially as specified.

Signed by me this 12th day of October, 1889.

GEO. M. GUERRANT.

Witnesses:

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THOMAS K. KENNEDY.