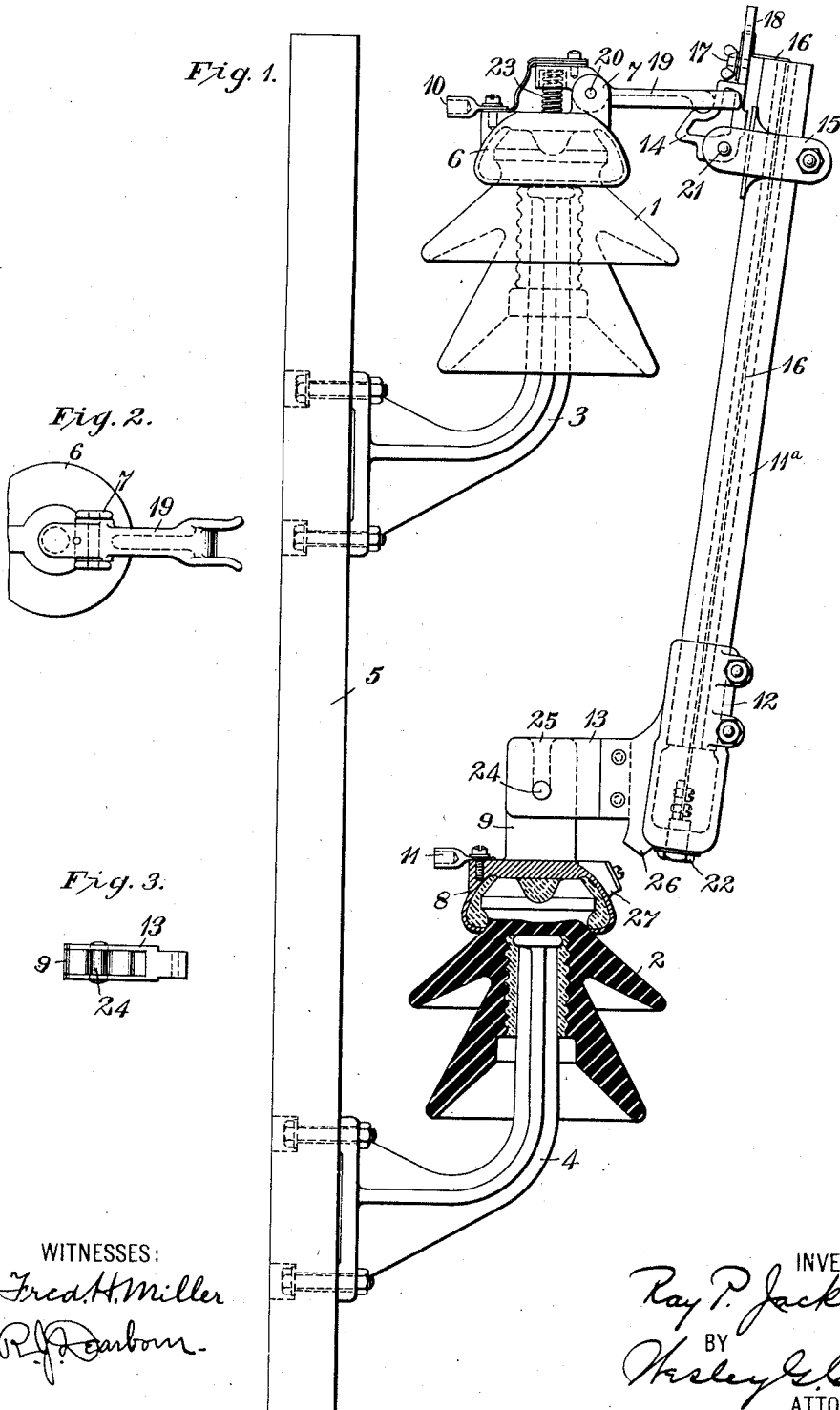


975,431.

Fig. 1.



WITNESSES:

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ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRIC-CIRCUIT INTERRUPTER.

975,431.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed February 2, 1907. Serial No. 355,498.

To all whom it may concern.

Be it known that I, RAY P. JACKSON, a citizen of the United States, and a resident of Wilkesburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Electric-Circuit Interrupters, of which the following is a specification.

My invention relates to electric circuit interrupters, and it has for its object to provide a device of the aforesaid class that shall be simple and inexpensive in construction; occupy a relatively small space and be specially adapted for protection of very high-voltage electric circuits which transmit relatively small amounts of power.

Devices, as heretofore constructed for the protection of very high-voltage electric circuits, may be divided into two general classes, a well known form of stick type circuit-breaker being indicative of one class and oil-immersed circuit interrupters of the other class. Stick type circuit-breakers which are adapted for use with high-voltage circuits necessarily occupy a very large space in order to permit the required movement of the contact arm. On the other hand, the cost of oil-immersed circuit interrupters suitable for high-voltage circuits is out of all proportion to the cost of the other apparatus required in small power stations.

According to my present invention, I provide a combined switch and fuse device which is so arranged as to interrupt a high-voltage circuit without injury to the device itself or to adjacent apparatus, and one of the principal advantages of my improved interrupter lies in the fact that, although the fuse is inclosed in a well known manner, all possibility of electrical leakage through the protecting tube is avoided by automatically separating one of its extremities from the electrically live parts when the fuse is ruptured.

Figure 1 of the accompanying drawings is a view, partially in section but mainly in elevation, of a circuit interrupting device constructed in accordance with my invention, and Figs. 2 and 3 are detail views of the contact members shown in Fig. 1.

Referring to the drawings, petticoat insulators 1 and 2 of a well known type are mounted on brackets 3 and 4 which may preferably be fixed to an insulating plate or slab 5. The insulator 1 is provided with a

cap 6 of conducting material having a forked projection 7 and the insulator 2 is similarly equipped with a cap 8 having a contact projection 9. Contact terminal pieces 10 and 11 are attached to the caps 6 and 8.

An insulating tube 11^a is provided with a clamp 12 of conducting material having a forked projection 13 which is adapted to engage the projection 9.

A contact member 14 having a projection 18 is pivotally mounted upon a pin 21 with which a clamp 15 upon the upper end of the insulating tube is provided, and a co-operating contact finger 19 is similarly mounted upon a pin 20 with which the projection 7 is provided. A strip or wire 16 of fusible conducting material is connected at one end to the contact clamp 12 by means of an adjustable terminal 22, its opposite extremity being connected to the projection 18 by means of a thumb screw 17. The fusible strip extends through the insulating tube 11^a and is of such length that, when it is tightly drawn, the projection 18 is substantially parallel to the axis of the tube. The contact finger 19 is so held in engagement with the contact member 14 by means of a spring 23, interposed between one extremity of the finger and the cap 6, as to exert a considerable tension upon the conductor 16. A pin 24 projects through the forked projection 13 of the clamp 12 and engages a slot 25 in the projection 9, thereby forming an axis upon which the tube may rotate through a predetermined angle, its movement being limited in one direction by the engagement of a stop 26 with a projection 27 upon the cap 8.

The operation of the device is as follows: Assuming that the circuit interrupter occupies a position as shown in Fig. 1 of the drawings, if the current flowing through the fusible conductor 16 exceeds a predetermined amount this strip will be ruptured and the arc established will be completely smothered by the tube 11^a. Following the rupture of the fusible conductor, contact member 14 is released and the action of the spring 23 upon the finger 19 forces the upper end of the tube outwardly until the limit of the movement in this direction is reached.

The circuit interrupter of my present invention is well adapted for outdoor service by reason of the fact that the insulating tube 11^a, which may become partially conducting

when damp, is not solely relied upon for the interruption of the circuit after the fusible conductor which it contains has been ruptured.

5 It is conceivable that numerous variations in the size and arrangement of parts may be effected within the scope of my invention.

I claim as my invention:

1. In a circuit interrupter, the combination with a base and insulated contact terminals supported thereby, of an insulating tube having contact members attached to its respective ends to engage said contact terminals, a fusible strip or wire extending through the tube and connecting the contact members together, and means cooperating with the upper contact terminal and member to automatically separate said member from said terminal as soon as the fusible wire or strip is ruptured.

2. In a circuit interrupter, the combination with an insulating plate or slab, a pair of brackets supported by said slab or plate and provided with insulators, metal caps secured to the insulators, and a latch projecting from one of them, of an insulating tube having terminal members one of which is pivotally connected to one of said caps and the other of which is provided with a movable catch to be engaged by said latch, and a fusible conducting strip or wire located in the tube and interposed between the pivotally connected terminal member and the movable catch to hold the latter in locking relation with said latch until ruptured.

3. A circuit interrupter comprising stationary contact terminals, and a movable switch arm comprising an insulating tube having end contact members one of which is pivotally attached to one of the contact terminals, a latch connection between the other member and the other terminal, and a strip or wire of fusible conducting material located in said tube and serving to connect the end contact members together and to release the latch connection, when ruptured.

4. A circuit interrupter comprising stationary contact members, a switch arm pivotally mounted on one of the members and comprising an insulating tube and a fusible conductor contained therein, and means dependent upon the rupture of the fusible conductor for automatically separating one end of the tube from its engaging contact member.

5. A circuit interrupter comprising an insulating slab or base, angle brackets attached thereto, insulators mounted on the

brackets, and caps of conducting material secured to the insulators, of a movable switch arm pivotally connected to one of the caps comprising an insulating tube and a fusible conductor contained therein, a pressure contact finger connecting the other cap with the switch arm, and means dependent upon the rupture of the fusible conductor for automatically separating the engaging end of the tube from the contact finger.

6. In a circuit interrupter, the combination with an insulating plate or slab, a pair of vertically aligned angle brackets supported by said plate or slab, insulators mounted on said brackets, and caps of conducting material secured to the insulators, of an insulating tube having end terminal pieces one of which is detachably and pivotally connected to one of the said caps and the other of which has a latch connection with the other cap, and a fusible conducting strip or wire extending through said tube and interposed between the pivotally connected terminal piece and the latch connection to hold the latter in locking condition until ruptured.

7. A circuit interrupter comprising stationary contact members, a switch arm, detachably and pivotally mounted on one of the members and comprising an insulating tube, and a fusible conductor contained therein, and means dependent upon the rupture of the fusible conductor for automatically separating one end of the tube from the contact member.

8. A circuit interrupter comprising an insulating slab or base, angle brackets attached thereto, insulators mounted on the brackets, and caps of conducting material secured to the insulators, of a movable switch arm detachably and pivotally connected to one of the caps and comprising an insulating tube and a fusible conductor contained therein, a pressure contact finger connecting the other cap with the switch arm, and means dependent upon the rupture of the fusible conductor for automatically separating the engaging end of the tube from the contact finger.

In testimony whereof, I have hereunto subscribed my name this 31st day of January, 1907.

RAY P. JACKSON.

Witnesses:

R. B. INGRAM,
BIRNEY HINES.