(No Model.)

A. C. CARLES.

AUTOMATIC CIRCUIT BREAKER.

No. 524,630. Patented Aug. 14, 1894.

Fig. 1.

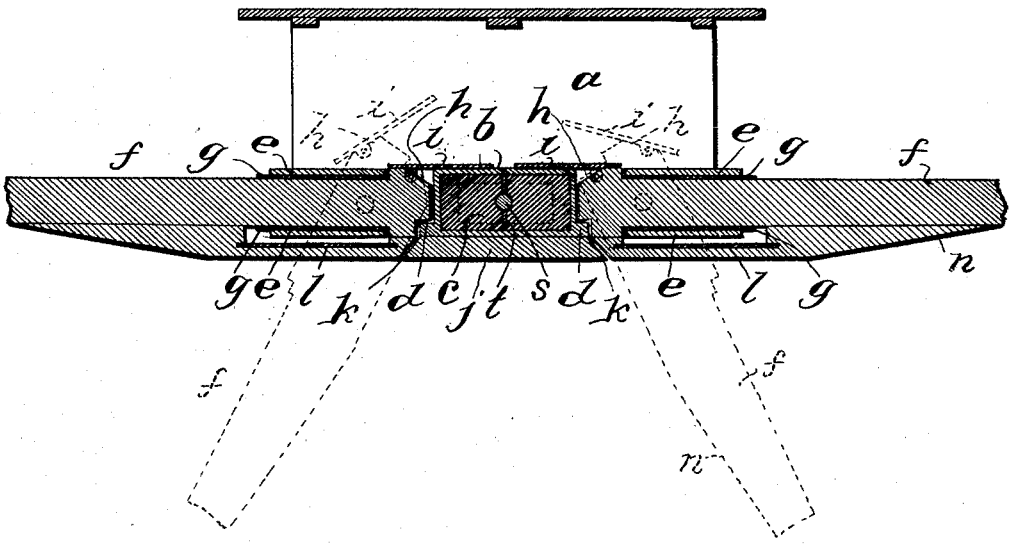


Fig. 2.

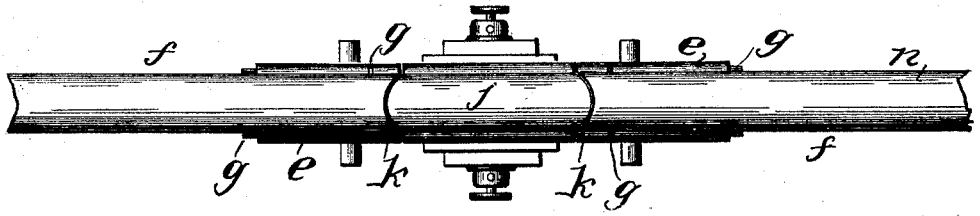


Fig. 3.

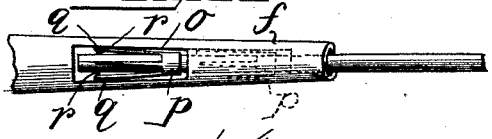
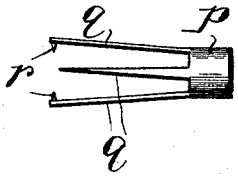


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

ANATOLE C. CARLES, OF PORTLAND, MAINE.

AUTOMATIC CIRCUIT-BREAKER.

SPECIFICATION forming part of Letters Patent No. 524,630, dated August 14, 1894.

Application filed April 14, 1894. Serial No. 507,598. (No model.)

To all whom it may concern:

Be it known that I, ANATOLE C. CARLES, a citizen of the United States of America, residing at Portland, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Automatic Circuit-Breakers for Broken Electric Wires; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in circuit breaking devices for broken electric wires.

It consists in a suitable supporting case, a bridge of some good conducting material, a carrier pivotally mounted in said case, a circuit breaking rod mounted in said carrier and insulated therefrom, and adapted to have one end attached to an electric wire and the other end held in contact with said bridge when the wire is strung, the contact end of said rod having a pivoted plate attached thereto and adapted to rest upon said bridge when the wire is strung.

It also consists in means for adapting said circuit breaker to use on electric wires, over which trolleys are designed to pass, and in certain other details of construction which will be hereinafter fully described and specifically claimed. Its object is to shut the electric current from broken and hanging electric wires.

In the drawings herewith accompanying and forming a part of this application, Figure 1 is a vertical central section of my improved device. Fig. 2 is a bottom plan view of the same. Fig. 3 is a detail view of circuit breaking rod showing means of attaching wire, and Fig. 4 is a detailed view of the clamping mechanism inserted in the end of said rod to hold the end of the wire.

Same letters refer to like parts.

In said drawings *a* represents a supporting case adapted to be attached to a pole or other support. Mounted in said case is a bridge of some good conducting material insulated from said case. The insulation may be effected by passing the bridge *b* around a non-conducting support *c* attached to the walls of the case, or in any other convenient manner. The bridge has flanges *d* on either end. Pivotally mounted in said case are metallic carriers *e* in which is set a circuit breaking rod *f*, which rod should be insulated from said carrier in some convenient manner, as by passing it through a gutta percha sleeve *g* inserted in said carrier. The end of said rod is adapted to engage the flange *d* on the bridge.

It has been found hitherto well nigh impossible to stretch the wires tight enough to prevent the end of the circuit breaking rod from being raised from the flange on the fixed bridge by the sagging of the wire, and thus break the circuit. To obviate this difficulty, I chamfer the top of the contact end of the circuit breaking rod, so as to give an inclined surface *h*, and pivotally attach to said rod a plate *i* in such position that it will drop down upon the metallic part of the bridge, even when the end of the rod proper is slightly disconnected from the flange on the bridge. The flange, however, operates to prevent the rods from dropping below the bridge. As thus constructed, it is well adapted for ordinary electric wires, such as electric light, telegraph, &c.

In order to adapt this device for use on wires, over which trolleys are to pass, I make on the bottom of the bridge a portion of a track *j* raised from the surface of the bridge, the ends of which are inclined as seen at *k* in Figs. 1 and 2, and I attach to each of the circuit breaking rods a section of a track to correspond with the portion *j*, said part of the track attached to the circuit breaking rod passing over or bridging the pivoted carrier, and insulated therefrom by a plate *l* of gutta percha or other non-conducting substance. The edge of this part of the track is inclined to correspond with the part of the track attached to the bridge, and is arranged so that when the wire breaks, the track on the pivoted carrier will slip by the portion of the track on the bridge, and the circuit breaking rod will drop into the position substantially as shown in dotted lines in Fig. 1. It will be apparent that when the outer end of the circuit breaking rod is depressed by reason of the sagging of the wire, the end of the rod will be raised from the flange on the bridge, but the inclined edge *h* allows the pivoted plate *i* to remain in contact with the bridge.

The track has its outer end inclined as seen at *n* in Fig. 1 to receive the approaching trolley easily.

The current is introduced through a conductor *s* passing through the case and the non-conducting supporting part of the bridge, and thence to the conductor proper by means of a conducting rod *t*.

My improved method of attaching the electric wire to the circuit breaking rod is illustrated in Figs. 3 and 4. The end of the circuit breaking rod is made hollow and has an opening *o* in the top thereof adapted to receive the clamping device proper. The interior of the hollow end of the rod tapers toward the end. The clamping device consists of a hollow tube *p* adapted to be inserted through the opening *o* in the rod. Tube *p* has clamping fingers *q* extending out from the end thereof, said tube and fingers being tapering toward the end. To attach the wire, insert the clamping tube through the hole *o* in the rod as seen in Fig. 3 introducing the end of the wire into the end of the rod and through the tube. The tube and wire are then drawn back until the clamping fingers on the tube are compressed by the sides of the tube upon the wire, thus holding it firmly. The more the wire is drawn back, the firmer becomes the grip of the clamping device. To increase the holding power of the clamping fingers, said fingers may have brads *r* inserted therein.

The advantages of my improved device are that due allowance is made for the sagging of the wires by means of the pivoted plate attached to the circuit breaking rod, that it is well adapted for wires over which trolleys are designed to pass, by reason of the track extending over the bridge and circuit breaking rod. It is simple in construction and certain in operation.

Having thus described my invention and its use, I claim—

1. In a circuit breaker for broken electric wires, a metallic bridge supported in a suitable case and insulated therefrom, a pivoted carrier mounted in said case, a circuit breaking rod having an inclined end set in said carrier and insulated therefrom, the inclined end of said carrier having a plate pivotally attached thereto and adapted to rest loosely upon said metallic bridge, but adapted to be disconnected therefrom by the breaking of the wire, substantially as and for the purposes set forth.

2. In a circuit breaker for broken electric wires, a suitable supporting case, a metallic bridge mounted therein and insulated therefrom, a carrier pivotally mounted in said case, a circuit breaking rod mounted in said carrier and insulated therefrom, a section of a track attached to said bridge and a similar section attached to said circuit breaking rod and insulated from said carrier, said last mentioned portion of the track and circuit breaking rod being adapted to be disconnected from the bridge and bridge track by the breaking of the electric wire, substantially as and for the purposes set forth.

3. In a circuit breaker for broken electric wires, the combination with a suitable supporting case and a pivoted carrier mounted in said case, of a tubular circuit breaking rod mounted in said carrier and having a tapering end and a side opening therein, and a tapering clamping device adapted to be inserted in said circuit breaking rod and engage the end of a wire inserted through the end of said rod and said clamp, substantially as and for the purposes set forth.

In testimony whereof I affix my signature, in presence of two witnesses, this 3d day of March, 1894.

ANATOLE C. CARLES.

Witnesses:
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