

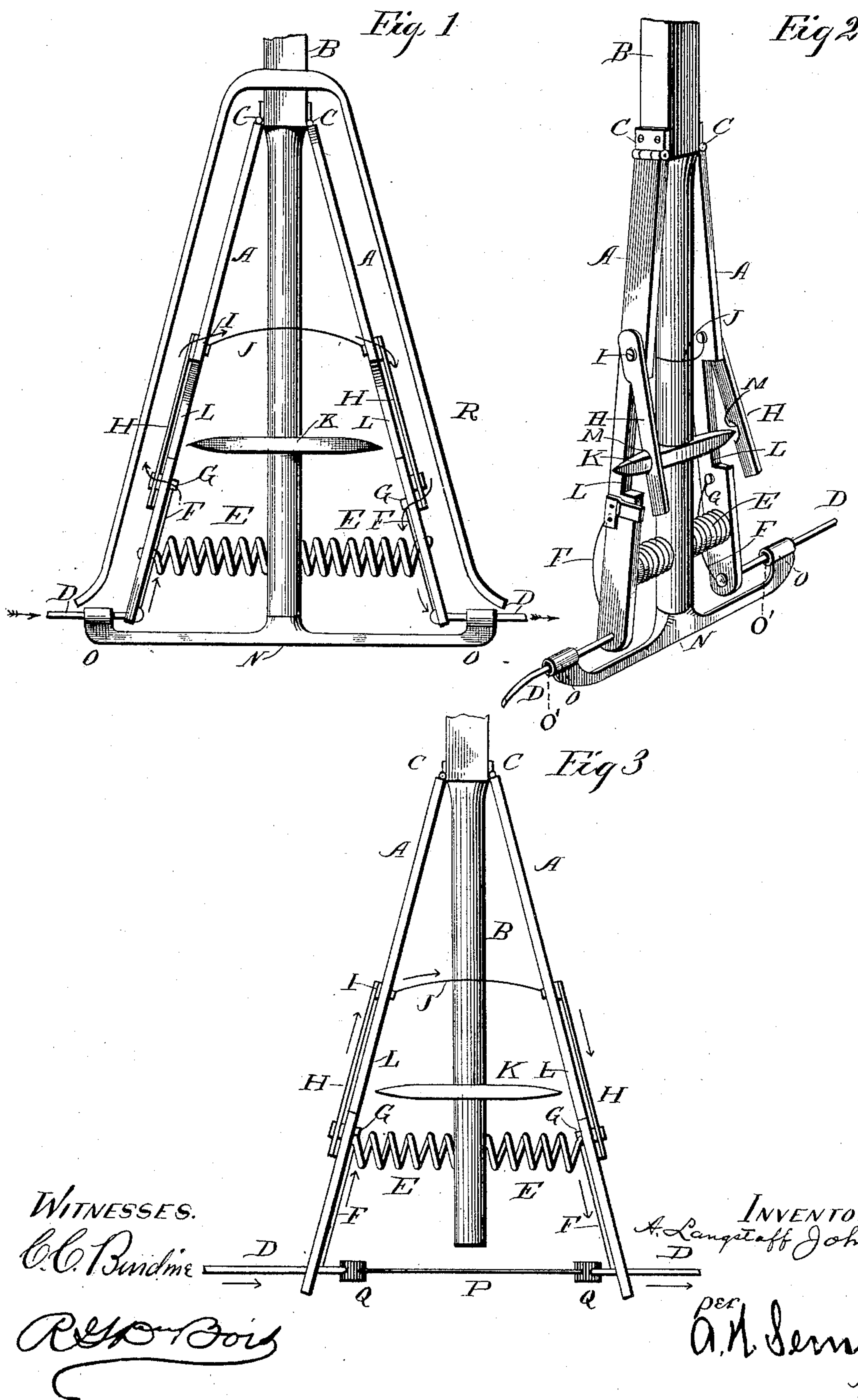
(No Model.)

A. L. JOHNSTON.

AUTOMATIC DISCONNECTOR FOR OVERHEAD CONDUCTORS.

No. 435,098.

Patented Aug. 26, 1890.



UNITED STATES PATENT OFFICE.

ANDREW LANGSTAFF JOHNSTON, OF RICHMOND, VIRGINIA.

AUTOMATIC DISCONNECTOR FOR OVERHEAD CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 435,098, dated August 26, 1890.

Application filed February 27, 1890. Serial No. 342,023. (No model.)

To all whom it may concern:

Be it known that I, ANDREW LANGSTAFF JOHNSTON, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented a certain new and useful Improvement in Automatic Disconnectors for Electrical Conductors, of which the following is a specification.

My invention has reference to an automatic circuit-breaker for suspended electrical conductors; and the object sought to be accomplished is to provide a simple, cheap, durable, and effective device which will immediately break the circuit at various points whenever the wire or conductor becomes broken or deranged, thereby preventing damage to persons and property when the wires break or come in contact with other wires.

A further object of my device is to combine an insulator with an automatic cut-off, whereby repairs can be made to the line-wire without interfering with the rest of the line or necessitating the current to be shut off from the main section.

With these ends in view my invention consists in the peculiarities and combinations of parts more fully described hereinafter, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a side elevation of my complete device; Fig. 2, a perspective view in which the current is shown broken as when the line-wire is slackened up by being severed; Fig. 3, a modification in which a different mode of insulation is shown.

A pair of arms A are hinged to a supporting-rod B by hinges C, and their lower free ends are attached to a line-wire or electrical conductors D, the weight of which spreads the arms apart against the tension of the retracting-springs E, which are given sufficient power to retract the arms A, as in Fig. 2, the moment the conductors D are broken, as will presently appear. Both of the arms are alike, and are composed of wood or other suitable non-conducting material, and the electric current is made to pass over them and to complete the circuit of the main line by means of the connecting-wires F, contact-points G, metallic connectors H, pivoted to the contact-points I, and cross-wire J. The vertical supporting-rod B is provided with a pair of rigid

arms K, having tapering ends which project through the holes L in the hinged arms A and into the recesses M in the sides of the connectors H. A bridge N is connected to the lower end of the supporting-rod B, and the opposite ends O of this bridge surround the line-wire D upon the outside of the free ends of the arms, which arms are limited in their outward play by coming in contact with the ends O. These ends or eyes are provided with an insulating-bushing O', which insulates the bridge from the main wire D. This bridge permits a trolley to pass freely along the wire when used for street-railways. In the modification shown in Fig. 3 the outward movement of the arms A is limited by a wire P, connected to the main wire D by the insulating-connectors Q. This construction may be employed when a bridge is unnecessary. Hence it will be seen that my device comprises a combined insulator and automatic circuit-breaker. The entire mechanism just described is provided with a cover R, to exclude rain, sleet, and other obstacles. It will be seen that the upper end of the rod B can be secured to any suitable support, so that the cut-out will also serve as an insulator, as the rod is thoroughly insulated from the main line.

The preferred construction of my device having been set forth, I will now proceed to describe its operation. As shown in Fig. 1, the line-wires D are connected to the free ends of the arms, and the weight or tension of the wires keeps the arms spread apart against the tension of the springs E. When in this position, the current passes freely through the connectors by first passing over wire F to the contact-point G, thence through the closed connectors H and cross-wire J down over the opposite connector H, contact-point G, and connecting-wire and out over the main line D, as will be clearly seen by the arrows. This is the normal condition of my device when applied to an electric circuit. Now when the line-wire breaks and the strain upon the spring-arms is removed, then the retractile force of the springs E will close them, as seen in Fig. 2, and in so doing the inclined surfaces of arms K will come in contact with the edges of the hinged connectors, and simultaneously push them back off of the con-

tact - points G. This action immediately breaks the circuit and deadens the wire. To re-establish the circuit the lineman has only to stretch up the wire and push the connectors H back onto their contact - points G. When a break occurs in the line-wire, it can be spliced without having to shut off the current at headquarters. The pivoted electrical connectors can be also used to cut off the current at any time when it is desired to repair the line.

My device may be placed at intermediate points along any electric circuit having suspended wires, care being taken to have the springs strong enough to draw the wire and close the arms whenever a break occurs.

Besides the modification previously mentioned, it is evident that many changes which would suggest themselves to a skilled mechanic might be resorted to without departing from the spirit and scope of my invention; therefore I do not limit myself to the exact construction herein shown, but consider myself entitled to all such variations which come within the scope and spirit of my device.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with a suitable support, a pair of spring-actuated arms having their free ends connected to and held apart by the main-line wire, electrical conductors upon said arms and arranged to form a loop in the main line, a pair of connectors upon said arms, an arm adapted to disconnect said connectors when the line-wire is broken, and a bridge extending across the lower free ends of said arms, whereby a trolley is permitted to pass, in the manner and for the purpose substantially as described.

2. The combination, with an electric wire or conductor, of a supporting-bar provided with a pair of hinged arms, a pair of laterally-extending arms having inclined surfaces, electrical connectors pivoted upon said hinged arms and arranged to be actuated by said laterally-extending arms, and electric wires or conductors secured to the free ends of said hinged arms, in the manner and for the purpose substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

ANDREW LANGSTAFF JOHNSTON.

Witnesses:

WALTER CHRISTIAN,
JOS. CHRISTIAN.