(No Model.)

A. E. HUTCHINS.

AUTOMATIC SAFETY APPLIANCE FOR ELECTRIC CONDUCTORS.

No. 544,436. Patented Aug. 13, 1895.

Fig. 1.

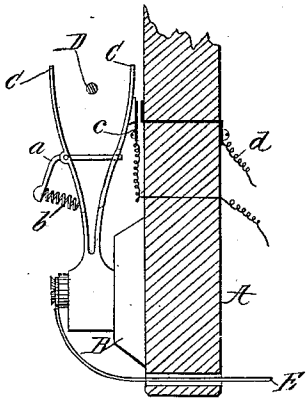
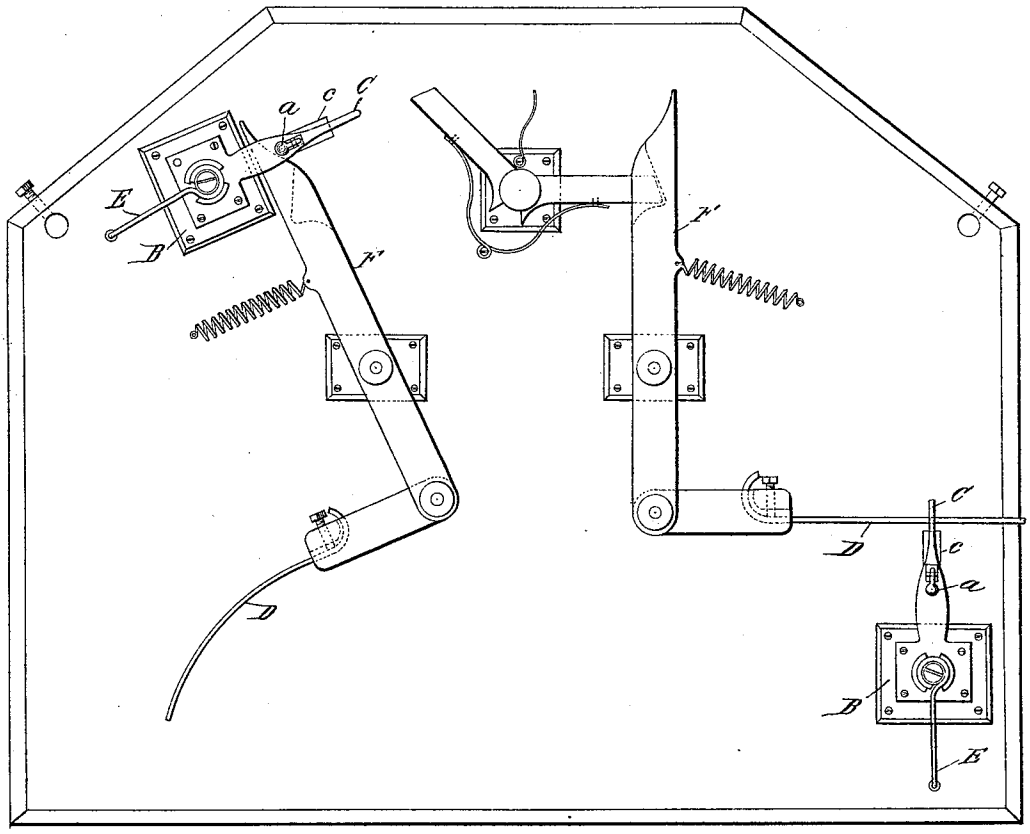


Fig. 2.



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UNITED STATES PATENT OFFICE.

ADELBERT E. HUTCHINS, OF DETROIT, MICHIGAN.

AUTOMATIC SAFETY APPLIANCE FOR ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 544,436, dated August 13, 1895.

Application filed May 9, 1893. Serial No. 473,572. (No model.)

To all whom it may concern:

Be it known that I, ADELBERT E. HUTCHINS, of Detroit, county of Wayne, and State of Michigan, have invented certain new and useful Improvements in Automatic Safety Appliances for Electric Conductors, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention has relation to apparatus for use in connection with electric conductors for the purpose of preventing injury to life or property by the passing current in the event of damage to the conductor or wire or disarrangement thereof from its normal position.

The principal object of this invention is to provide a simple, cheap, and efficient form of appliance or apparatus which may be located at any desired point or points in proximity to the electric conductor and which will operate to automatically shunt the current from the main line to the ground or ground-conductor as soon as the main line or conductor breaks or sags or is otherwise caused to leave its normal suspended position, thus preventing injurious effect upon any person or object which may come in contact with the disarranged conductor, and a subordinate object is to provide for signaling to any station as soon as any damage occurs to the main line. To accomplish all of this my improvements involve a receiver or catch for the line or any movable part connected therewith and mechanically operated thereby, and the location of such receivers in any number, so as to operate in connection with the line and with suitable ground-connections, as also a simple means for closing a signal-circuit, as will be hereinafter first fully described, and then pointed out in the claims.

In the drawings, Figure 1 is a sectional elevation of one of my improved devices, showing the same mounted upon a base in proximity to a line or wire and ready to operate in connection therewith. Fig. 2 is a view in elevation representing the wire protected by one form of mechanical safety apparatus, my improved catch being shown in addition in position for operation in connection with the wire and also for operation in connection with one of the hinged arms of the said apparatus.

In both figures like letters of reference, wherever they occur, indicate corresponding parts.

A is any suitable form of base or support, which may be located in proximity to the line or any piece or part connected therewith, which base is adapted to sustain my improved device.

B is an insulating-plate interposed between base or support A and the improved receiver or catch. The receiver or catch consists of two arms C C, one of which at least is in the form of a spring, these arms being spread at top and mounted on plate B, constituting a fork of which the sides are gradually inclined toward each other. When in use, this receiver is located so that the wire or the movable lever or piece connected therewith normally rests between the arms, touching neither.

D is the wire, which in Fig. 1 is shown in cross-section, the receiver being located in proper position for use in connection therewith. Passing through and pivoted in one of the arms C is a light trip-lever *a*, one end of which enters a slot provided for it in the opposite arm, and a light spring *b* operates to return this lever to its normal position after being depressed, as it is when the wire or other object strikes against it.

E is a wire of low resistance leading from the arms to the ground or to a ground-connection of low resistance.

The operation of my device depends upon the principle that the electric current will follow a path of low resistance, if provided, leaving unaffected one of higher resistance, like that afforded by a person, or animal, or a wooden building, or other such object with which the wire or other part of any conductor carrying a dangerous current may come in contact.

When the protecting device is in position as shown, if the conducting-wire D sags it is caught in the fork between arms C, depressing lever *a*, which it passes, and which lever immediately returns to its normal position. The current is then shunted to the ground or ground-line through wire E, and therefore any person or object with which the main line may come in contact will not be affected by the current over the line. The sagging

line is caught in the fork, so that it will not slip therefrom, the fork being located near one of the usual points of support for the line, as indicated at the right of Fig. 2. If the line be cut or broken, it will sag and be caught in the same way, and if one of the safety appliances be located near each end of the section of the line it will be protected, even though it be dragged out of the fork at one point, the other fork operating to shunt the current. The lever *a* prevents the wire from leaving the fork by turning upwardly at the end, as sometimes happens when it breaks near the point of support.

The improved device is alike applicable in connection with the suspended conductor or with any part mechanically moving therewith. F F, Fig. 2, for instance, represent levers of any mechanical safety appliance with which the main line can be connected, and at the left of this figure one of my improved devices is located, so as to receive the lever as soon as it swings far enough out of its normal position, as it will do whenever the connected line is broken, and thus serve to shunt the current from the line through the lever to the ground, rendering the current harmless in the manner above explained.

The spring-fork affords a convenient means for operating a signal-circuit when the line or other part enters the fork far enough to spread the arms. I therefore attach to one of the arms C one section, as *c*, of an auxiliary line, and the other section *d* I connect with a plate located in the path of the said arm. When the arm is moved, it closes the circuit represented by sections *c d*, and may thus serve to communicate intelligence of a disarrangement of the conductor in a manner readily understood.

The improved device is applicable at any part of the line and at as many points thereof as may be deemed necessary to insure the desired protection, and it may be used in situations where other mechanically-operated safety appliances are impracticable or incapable of being applied.

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

1. The herein described appliance for use in connection with electric conductors, the same consisting of forked arms between which the conductor is received and by which it is grasped and held as soon as it leaves its normal position, and a conductor of low resistance connected with said arms, substantially as and for the purposes set forth.

2. In an appliance of the character herein set forth, the combination with the main wire, of the forked arms one of which is provided with a spring actuated latch pivoted thereon, said latch being arranged to be displaced by the main conductor as it falls and to return to its original position, substantially as and for the purposes set forth.

3. In an appliance of the character herein set forth, the two spring arms forked as explained and arranged to catch and hold the main conductor when disturbed, a section of an auxiliary conducting arm, a plate located in the path of one of said spring arms, the plate being connected with another section of the auxiliary conductor and the parts arranged to close the auxiliary circuit, combined and arranged substantially as shown and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

ADELBERT E. HUTCHINS.

Witnesses:
JOHN BUCKLER,
WORTH OSGOOD.