(No Model.) 2 Sheets—Sheet 1.

A. E. HUTCHINS.

SAFETY APPLIANCE FOR ELECTRIC CONDUCTORS.

No. 545,629. Patented Sept. 3, 1895.

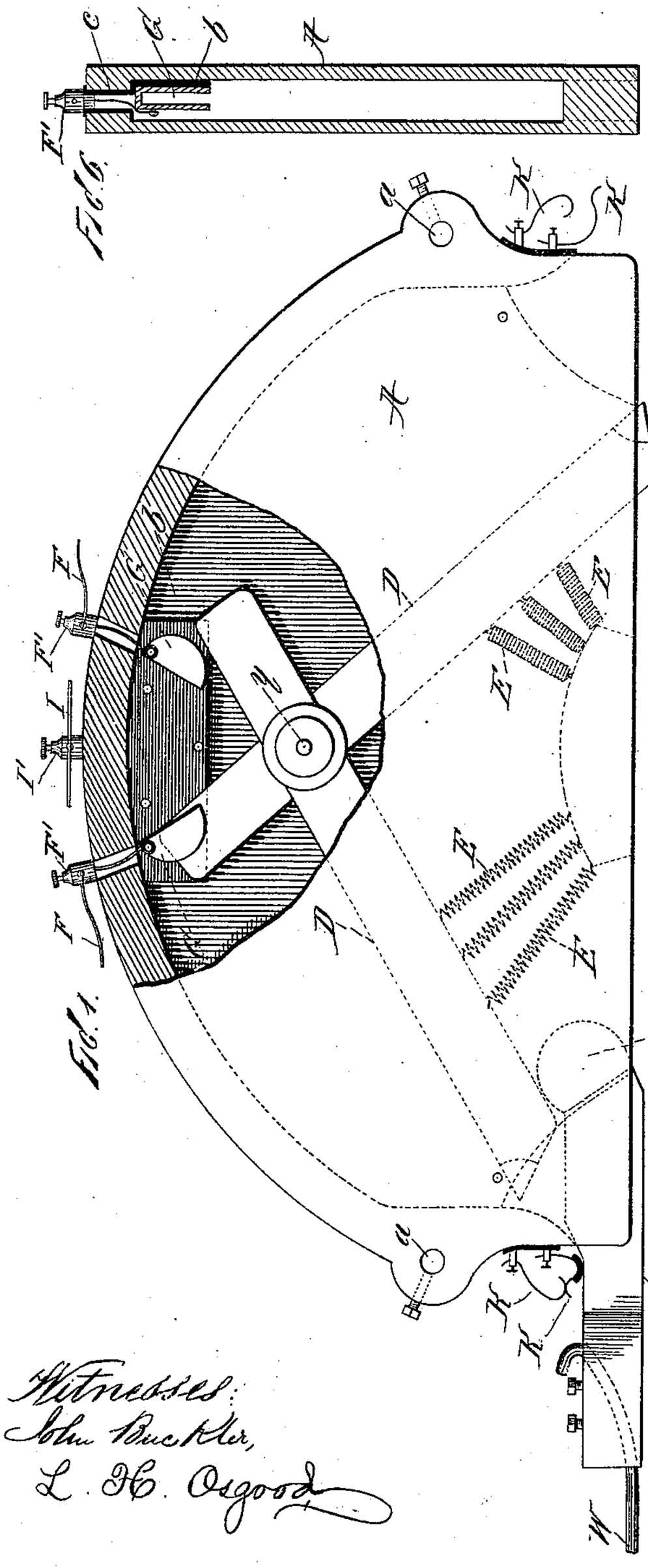


Fig. 1.

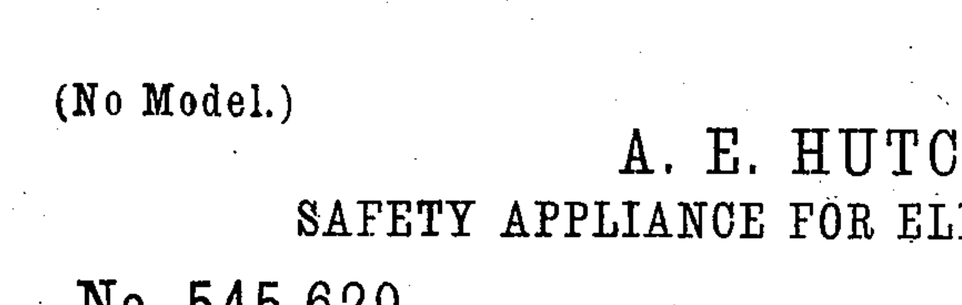


Fig. 6.

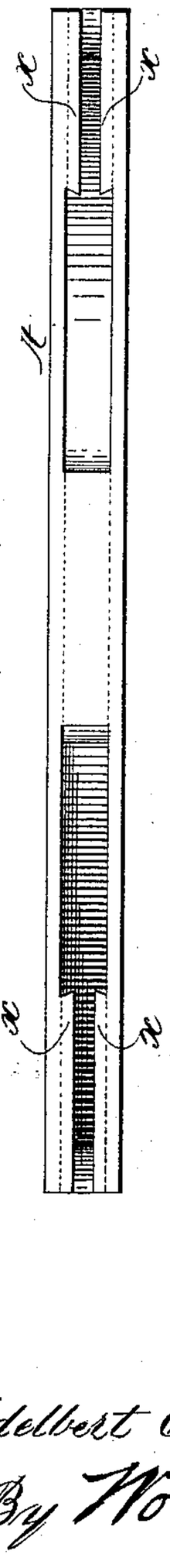


Fig. 2.

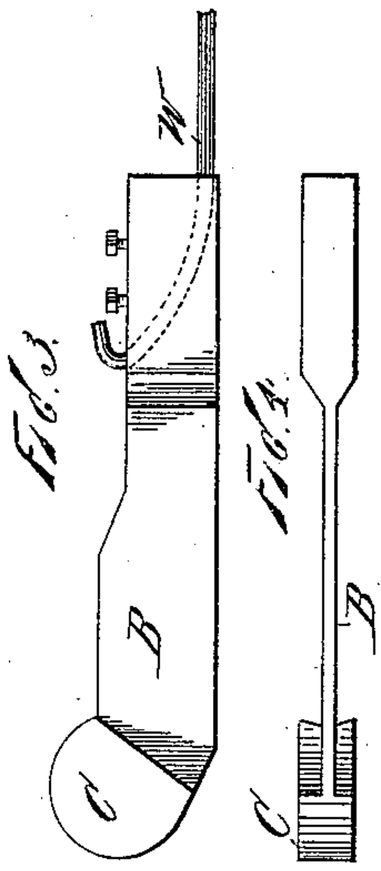


Fig. 3.

Fig. 4.

Fig. 5.

Witnesses:
John Buckler,
L. H. Osgood

Inventor:
Adelbert E. Hutchins,
By Worth Osgood,
Attorney.

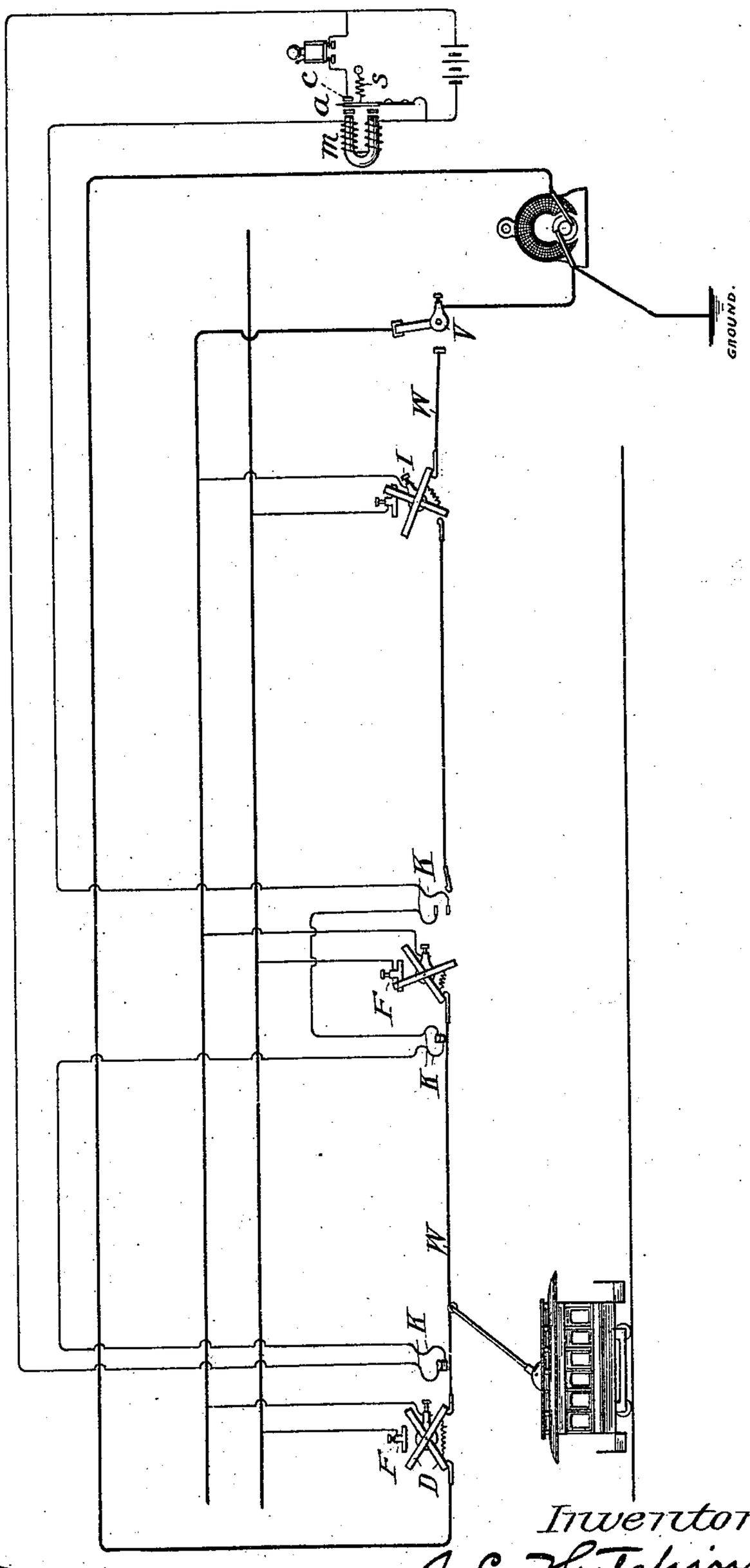
(No Model.) 2 Sheets—Sheet 2.

A. E. HUTCHINS.

SAFETY APPLIANCE FOR ELECTRIC CONDUCTORS.

No. 545,629. Patented Sept. 3, 1895.

Fig. 2.



Witnesses.
O. J. Morgan
H. A. C. McSorley.

Inventor:
A. E. Hutchins
By Worth Osgood
Atty.

UNITED STATES PATENT OFFICE.

ADELBERT E. HUTCHINS, OF DETROIT, MICHIGAN.

SAFETY APPLIANCE FOR ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 545,629, dated September 3, 1895.

Application filed May 5, 1893. Serial No. 473,107. (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 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 appliances for use in connection with overhead or suspended electric conductors, to render the same harmless to life and property the instant the suspended conductor is broken or seriously disarranged or slackened, the principal object of my said invention being to provide or produce a simple, cheap, and efficient apparatus or appliance of the class named which may be easily and conveniently mounted in connection with the electric conductor and which will operate to automatically sever the conductor and thus render it harmless as soon as it is sufficiently slackened from any cause. Subordinate objects are the provision of simple and convenient appliances for transferring the current from the unsevered portion of the conductor to an idle wire or to another line, to provide for transmitting intelligence of an interruption in the main current as soon as the interruption occurs, and to render the device compact and secure against damage by storms or interference by dust, &c.

To accomplish all of this and to secure other and further advantages in the matters of construction, operation, and use, my invention involves certain new and useful arrangements or combinations of parts, principles of operation, and peculiarities of construction, as will be herein first fully described, and then pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the frame or casing of an apparatus constructed and arranged for operation in accordance with my invention, a section of the electric conductor on one side being in place, but omitted from the other side, as when it has been separated, the dotted lines indicating the location of parts within the casing. Fig. 2 is a plan of the under side of the casing shown in Fig. 1. Fig. 3 is a side elevation of one of the pieces or blocks which are attached to the sections of the suspended conductor, and Fig. 4 is a plan of the under side of the same. Fig. 5 is a plan of one of the arms shown in dotted lines in Fig. 1. Fig. 6 is a sectional view through the casing or cover, showing the slotted plate for receiving the end of the arm when the current is to be transferred, the said plate being insulated from the cover or casing. Fig. 7 is a view showing circuit connections.

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

A represents a casing or cover of metal of which the side walls and top are united so as to exclude water, dust, &c., the lower part being open near the ends. This casing is to be suspended from any convenient support, the points *a a* being convenient for the application of any sustaining-wire, and when in place this casing forms a part of the electric conductor.

W represents a section of the main wire or suspended conductor which it is designed to protect or render harmless in case of accident thereto. At the points where the safety apparatus is interposed the conductor W is supplied with a block or piece B, attached in any convenient and secure way. Upon this block is an enlarged head C the bearing-faces of which are slightly inclined and undercut, as will be apparent from Figs. 3 and 4.

The casing A has interior ledges, as *x x*, on each side, also inclined and undercut, so as to make a fair bearing for the corresponding surfaces on the enlarged head C. Between these ledges the shank of block B is inserted, the head bearing against the ledges when the line or wire W is drawn taut. One section of line W being on each side and both drawn taut, it is plain that the blocks will be wedged and firmly held in place, thus securing the line and establishing electric connection between it and the casing or cover. As soon as either section of the line thus adjusted becomes slackened or breaks or falls the attached block slips from the casing and drops away and thus instantly destroys the electric connection with it, so that it is rendered perfectly harmless. This feature of the inven-

tion may be used without other appliances. Throughout the length of the line W as many of the safety devices may be applied as may be desired. Between any two protected points the section of wire W is simultaneously severed at both ends

In cases in which there may be danger of the parts not operating freely by gravity alone, as when sticking may occur in consequence of rust, the presence of dirt, &c., or from other causes, to force the blocks out of their bearings I employ arms, as D D, pivoted within the casing. These are acted upon by springs, as E E, and bear upon the blocks, so that as soon as they (the blocks) are loosened the arms will force them to descend or push them off their bearings. The ends of arms D are fashioned so as to enter between the ledges *x x*, and they are pivoted within the casing, as at *y*. When these arms are employed, they may also be made to serve as means for transferring the current to some other path, as to an idle wire F, which will conduct the current. The binding-post F′ for the idle wire is connected with a plate G within the casing, the plate and connections being insulated from the casing, as at *b c*. The extremities of arms D ordinarily rest free from plates G; but as soon as either of them is allowed to turn upon its pivot, which will occur the instant the block can be disturbed from its seating, it engages with plate G and thus establishes communication between the casing and the idle wire or other auxiliary conductor, as is easily understood.

The appliance so far described may be used in connection with any conductor over which a deadly or dangerous current is allowed to pass. The lower face of the casing being plain and forming, as it does, a part of the conductor, it is well adapted for use in connection with trolley-wires, the trolley riding on the casing without any interruption of the contact or current.

The electric current may be fed to the wire W directly or it may be supplied through a supply-line I, connected with the casing, as at a binding-post I′.

At K K are any simple forms of springs insulated from blocks and casing held in contact when the line is complete and in order, but arranged to separate as soon as the blocks B, by which they are held, are allowed to drop. These springs may close a signal-circuit, the breaking of which will cause a signal to be given at any desired station, indicating that the line needs attention, and the signal is automatically given as soon as any accident occurs to the line.

The appliance is simple of construction, automatic, certain in action, and well calculated for the purposes intended.

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

1. In an apparatus of the character herein set forth, the blocks applied upon the ends of the sections of the conductor and having enlarged heads with inclined undercut bearing surfaces, and the frame for receiving said blocks having interior ledges with inclined bearing surfaces, the said frame being closed at top and open at bottom and constituting a portion of the conductor and the parts being arranged to separate as soon as the line is slackened, substantially as and for the purposes explained.

2. In combination with the blocks connected with the sections of the conductor and the frame for receiving and holding said blocks, of the arms pivoted within the frame, bearing upon the blocks and operated by springs, substantially as and for the purposes set forth.

3. In combination with the frame, the conductor, the blocks attached thereto and the auxiliary conductor, the levers pivoted in the frame, and the insulated plates located in the paths of said levers, the levers being held normally out of contact with the plates by bearing upon the blocks connected with the conductor, and the insulated plates being connected with the idle or auxiliary conductor, the parts being arranged to operate substantially as and for the purposes explained.

4. In combination with the blocks connected with the sections of the conductor and the frame for receiving and holding said blocks, of the arms pivoted within the frame, bearing upon the blocks and operated by springs, and the springs K. K., insulated and interposed between the frame and blocks, substantially as shown and for the purposes set forth.

5. In an apparatus of the character herein set forth, the combination with the main conductor and the blocks attached to the sections thereof, of the frame composed of the closed top and side walls, the same being open at bottom to receive the blocks and provided with means for connecting it with supports, and constituting, when the parts are in working position, a section of the main conductor, substantially as shown and described.

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.