

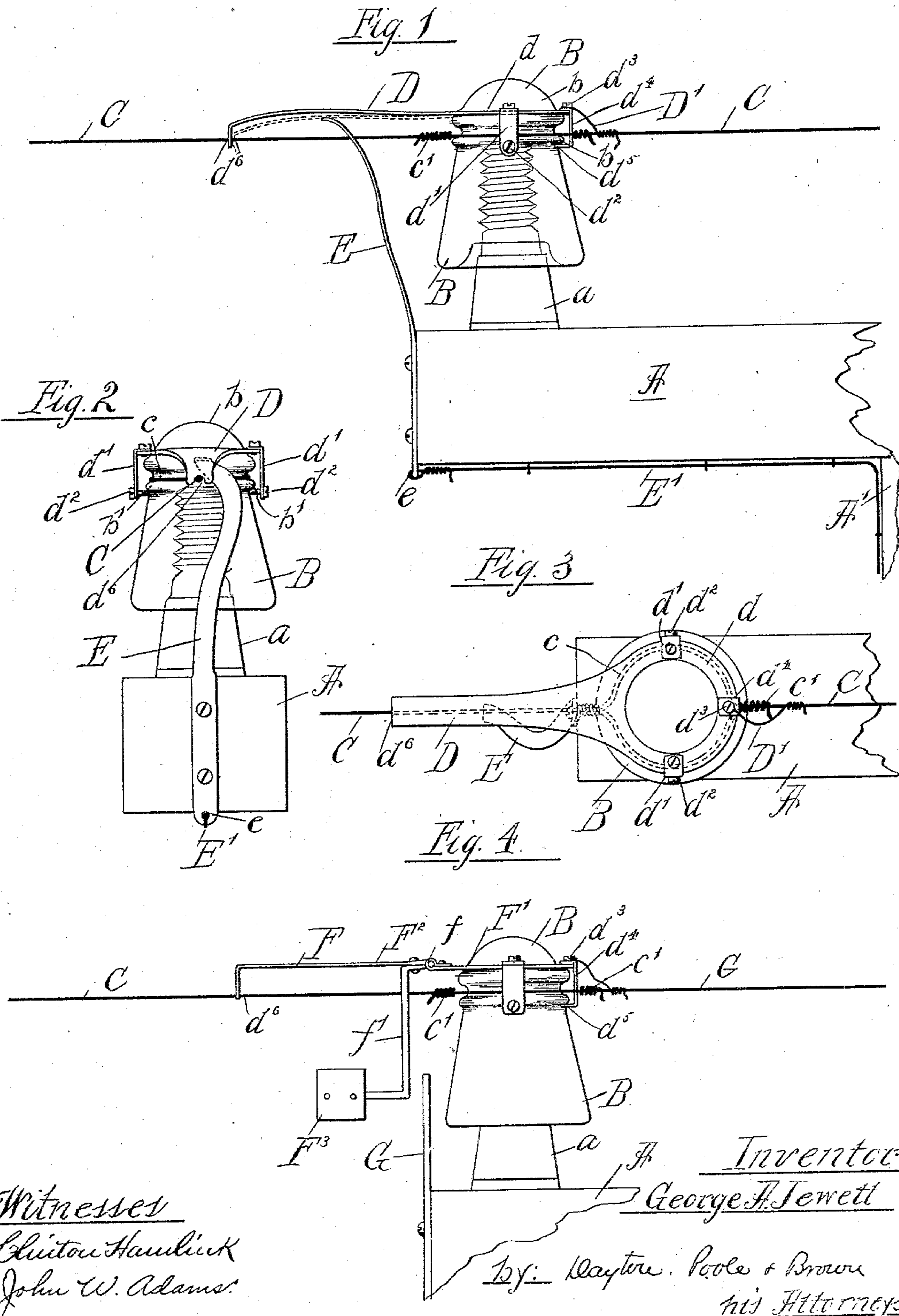
(No Model.)

G. A. JEWETT.

AUTOMATIC GROUNDING DEVICE FOR ELECTRIC CONDUCTORS.

No. 556,823.

Patented Mar. 24, 1896.



UNITED STATES PATENT OFFICE.

GEORGE ALONZO JEWETT, OF CHICAGO, ILLINOIS.

AUTOMATIC GROUNDING DEVICE FOR ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 556,823, dated March 24, 1896.

Application filed July 8, 1895. Serial No. 555,182. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ALONZO JEWETT, of Chicago, in the county of Cook and State of Illinois, have invented certain
5 new and useful Improvements in Automatic Grounding Devices for Electric Conductors; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings,
10 and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in short-circuiting devices of that type which are
15 adapted for use in connection with suspended electric conductors or wires for the purpose of instantly short-circuiting the current to the ground when the conductor or conducting-wire is broken.

20 The object of the invention is to provide an improved construction in devices of the character referred to; and it consists in the matters hereinafter set forth, and particularly pointed out in the appended claims.

25 A short-circuiting device embodying my invention comprises in its construction an insulated movable or vibratory part sustained adjacent to the line-wire support and which is held out of its normal position by engagement with said line-wire and a contact-piece
30 in electric connection with the ground against which said movable part will be brought in case tension is taken from the line-wire by the breakage of the latter. Said movable
35 part may be moved by a spring or by a suitably-applied weight, acting to throw the same toward the contact-piece and hold it against the wire with some pressure, so that in case the wire breaks, and thus releases said movable
40 part, it will be thrown instantly and automatically against the contact-piece and thereby make immediate connection between the wire and the ground.

45 In the accompanying drawings, Figure 1 is a side elevation of a short-circuiting device constructed in accordance with my invention and applied to the insulating-support of a telegraph-wire or similar electric conductor. Figs. 2 and 3 are side and top plan views
50 thereof, respectively. Fig. 4 is a view, similar to Fig. 1, of a short-circuiting device also

embodying my invention, but slightly modified from the constructions shown in Figs. 1, 2, and 3.

In said drawings, A designates a longitudi- 55
nally-arranged cross piece or bar which may be attached to a telegraph-pole A' or other suitable supporting structure. Said bar is provided with an upwardly-projecting stud
60 a, the upper end of which is screw-threaded to engage the usual screw-threaded socket of an ordinary glass or porcelain insulator B.

C is a telegraph or other conducting wire secured upon the insulator B by means of a short wire c, which has its ends c' tightly 65
coiled about the wire C, and, with the intermediate portions of the latter, forms a loop that tightly encircles the insulator and thereby supports the wire. From the insulator B
70 the wire extends to the next succeeding supports in both directions, said succeeding supports being usually of the same general character as that above described, although they may be otherwise constructed if found desirable, since in themselves they constitute 75
no portion of my invention.

In the form of short-circuiting device illustrated in Figs. 1, 2, and 3, D designates a spring-arm rigidly secured to the insulator B and extending along and above the con- 80
ductor-wire C for a distance of several inches. The free outer end of the spring-arm D rests upon the wire C, and the arm is thereby supported in a position somewhat above the position it would normally assume if the wire 85
C were removed. In other words, the spring-arm D is so secured to the insulator that the wire C, when stretched in the usual manner between its supports, will engage and lift the outer end of the spring-arm, as shown in Fig. 90
1, above the position which said arm would naturally assume if not thus supported. As illustrated in Figs. 1, 2, and 3, the spring-arm D is conveniently secured to the insu- 95
lator B by being enlarged and apertured at its inner end d to fit over the usual rounded top b of the insulator, and by being provided with appropriately-arranged depending lugs d', having inwardly-projecting set-screws d²,
100 the points of which engage the lower side of one of the usual annular ribs b' of the insulator, and thus bind the arm D in place

thereon. The arm D is furthermore maintained in constant electrical communication with the wire C by any suitable means, as by a short-circuiting wire D'. The latter is herein shown as wound at one end around the wire C close to its juncture with the insulator and as secured at its other end by a binding-screw d^3 to a third depending lug d^4 , located on the arm D opposite the projecting end of the latter. An inwardly-extending toe d^5 on the lower end of the lug d^4 is also provided to project beneath the rib b' of the insulator and further secure the arm in place thereon. To keep the wire C from slipping out from beneath the arm D, the outer end of the latter is bent downwardly and provided with a notch d^6 , within which the wire is seated.

E designates an upwardly-projecting metallic strip or arm secured to the support A and terminating at its upper end at a point just beneath and normally out of contact with the spring-arm D. Said metallic strip is provided with a metallic connection leading down the supporting structure into the ground, and in this instance formed by a wire E', which is looped through an aperture e in the lower end of the arm E, and extends thence along the bar A and down the pole A'. The strip E is furthermore normally out of contact with the wire C, and to this end is bent at its upper end so as to pass around the wire C and between the latter and the superjacent arm D without coming into contact with either.

The device thus described obviously has no effect on the passage of electric currents through the conductor C so long as the latter remains intact and in its proper position. When, however, by accident or otherwise, the wire is broken or depressed so that it no longer supports the arm D, the latter springs downward and comes into contact with the strip E, as shown in dotted lines in Fig. 1. The current is then free to pass from the wire C to the ground through the arm D and metallic strip E, and the alteration in the resistance of the current caused by the "ground" thus effected notifies the operators of the existence of the break.

In the construction shown in Fig. 5 an arm F of the same general shape as the arm D is employed, but instead of having a spring-arm made of a single piece the arm F is made of two parts, F' and F^2 , connected by a hinged joint f . The part F' is firmly secured to the insulator B in the same manner as the inner end of the arm D. The part F^2 is free to oscillate about the hinged joint f in a vertical plane and normally rests with its outer end upon the wire C. Depending from the oscillating part F^2 , and in this instance from a point thereon near the hinge f , is a rigidly-attached arm f' , which extends downwardly to a point opposite the upper end of a metallic strip G, similar to the strip E, hereinbefore described, and similarly grounded. When the

wire C breaks and ceases to support the oscillatory member F^2 , the weight of the latter causes it to swing down about the hinge f until the lower extremity of the arm F^2 strikes the upper end of the strip G, and the current through that portion of the wire C which remains fast to the insulator is thereby instantly shunted to the ground through the strip G and its ground connections. To render the action of this device certain without making the member F^2 itself unnecessarily heavy, a separate weight F^3 is attached to the member F^2 in this instance by being secured to the outwardly-projecting end f^2 of the arm f' . The gravity of this weight F^3 will be certain to overcome any stiffness of the hinge f or other resistance to the downward movement of the part.

It will be obvious that if found necessary or desirable my improved short-circuiting device may be made double—i. e., may be made with two oppositely-arranged resilient or weighted arms projecting outwardly over the wire on both sides of the insulator and with two stationary contact-pieces provided with ground connections and terminating closely adjacent to the vibratory arms. When a line is provided with a double device of this character at each insulator, it will be obvious that each section into which the wire is separated by a break will be grounded, whereas in case the line is provided with single devices, such as have been more particularly illustrated and described, only the section of wire on the side of the support opposite to the vibratory arm will be grounded when a break occurs which will throw that part of the circuiting device in operation.

Short-circuiting devices of the character illustrated may be employed with advantage in lines which convey high-tension currents, whether alternating or continuous, that are dangerous to life and property, as well as in telegraph, telephone and similar lines in which the current is comparatively light, and when so employed render the fallen ends of a broken wire entirely harmless by affording a path of minimum resistance through which the current will be shunted instead of passing down through said broken ends and through whatever objects they may have fallen in contact with. Said short-circuiting device is also of great utility when used in connection with open-circuit lines, or those in which the battery is normally out of circuit, such as are used in municipal and like signaling systems, the grounding of the wire in the manner described enabling the presence of a break to be instantly detected by the employment of a suitable alarm device which is operated by the decrease of resistance in the line produced by the short-circuiting.

I claim as my invention—

1. The combination with a suspended electric conductor or wire and its supports, of a short-circuiting device comprising a part electrically connected with the ground, a second

part which is movably attached to a support and which bears against but is unattached to the wire and is normally held by said wire out of contact with the first part, said second part being electrically connected with the wire, and means for applying constant pressure to the second part in a direction to force it into contact with the first part, substantially as described.

2. The combination with a suspended electric conductor or wire and its supports, of a short-circuiting device embracing a yielding part which is attached to a support independently of the wire and rests in contact with the wire but is unattached to the same, electric connections between the said yielding part and wire, and a second part electrically connected with the ground and extending to a point adjacent to the yielding part and in such position that when the yielding part is released by the slacking of the wire it will make contact with said second part and complete a circuit therethrough to the ground, substantially as described.

3. The combination, with a suspended electric conductor or wire and a support to which said wire is directly secured, of a vibrating arm secured at its inner end to the support and pressed yieldingly against the wire at its outer end, said vibratory arm being electrically connected with the wire, and a stationary metallic part electrically connected with the ground and terminating immediately adjacent to said arm but out of contact with the arm or wire, whereby when the vibratory arm ceases to be supported by the wire it is thrown against the stationary part and shunts the

current to the ground, substantially as described.

4. The combination, with a suspended electric conductor or wire and a support to which said wire is attached, of a spring-arm secured to the support and resting at its outer end against the wire, electrical connections between the spring-arm and wire, and a stationary part electrically connected with the ground and terminating in close proximity to the spring-arm, the latter being adapted to move into contact with said stationary part when unsupported by the wire, substantially as described.

5. The combination, with a suspended electric conductor or wire and an insulator to which said wire is attached, of a spring-arm apertured at one end to fit over the insulator and provided with clamping-screws for securing it in place thereon, the outer end of the arm being pressed yieldingly against the wire and being normally supported thereby, and a stationary metallic part terminating in close proximity to the spring-arm and adapted for contact therewith when the arm is unsupported by the wire, said stationary part being electrically connected with the ground, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 28th day of June, A. D. 1895.

GEORGE ALONZO JEWETT.

Witnesses:

C. CLARENCE POOLE,
WILLIS D. SHAFER.