May 4, 1948. W. HEIMKE 2,440,900

GROUND DETECTOR FOR ELECTRIC WIRE FENCES

Filed Nov. 6, 1944

Fig. 1.

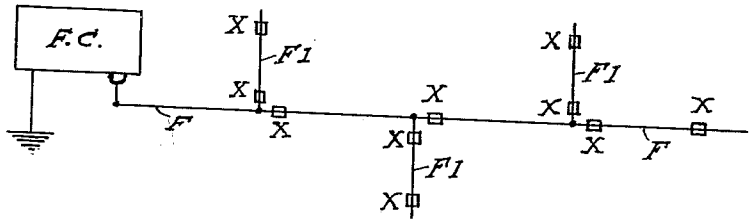


Fig. 2. (VIEW OF X)

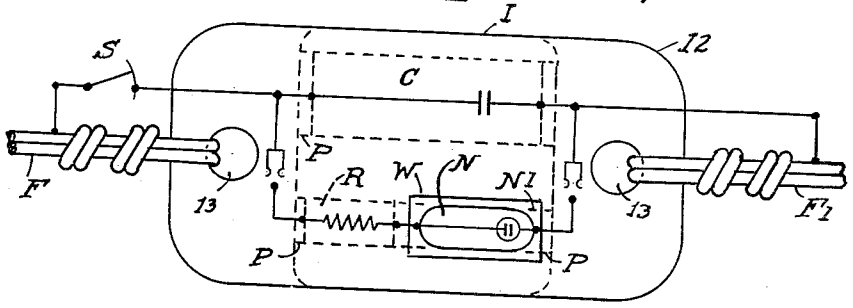


Fig. 3.

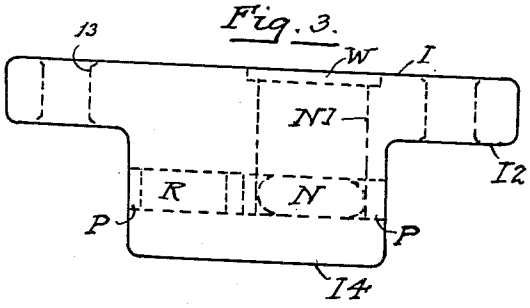


Fig. 4.

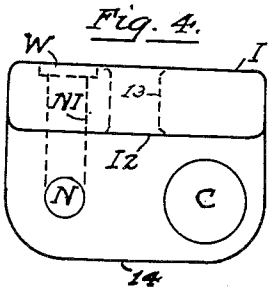
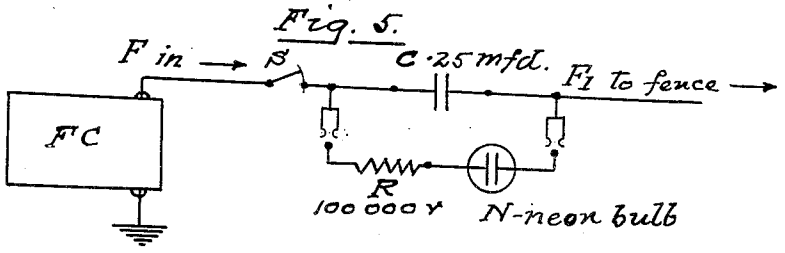


Fig. 5.



INVENTOR.

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GROUND DETECTOR FOR ELECTRIC WIRE FENCES

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4 Claims. (Cl. 177—311)

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My invention relates to wire fences of the type in which the wire is periodically charged with a high-tension electric current for the purpose of discouraging attempts on the part of an animal to break through the fence, and its principal object is to provide means for giving warning in case the fence may be permanently grounded by accidental means, such as for example the falling of a tree or a weed upon the fence and especially to indicate which particular section of the fence is grounded.

In carrying my said invention into effect I provide at various critical points in the fence a detector unit comprising a condenser, a resistor and a neon bulb, so connected in the circuit that when a ground occurs the bulb is lighted.

With the aforesaid and other objects in view, I will now describe a preferred embodiment of my invention, reference being had to the accompanying drawings, in which—

Figure 1 is a part plan of a wire fence installation showing my detector apparatus applied thereto.

Figure 2 is a plan view of one of the detectors as connected in the fence circuit through a strain insulator.

Figure 3 is a side elevation of the insulator.

Figure 4 is an end elevation of the same, and

Figure 5 is a diagram illustrating the general hook-up of the detector, showing exemplary capacities of the various elements.

Like characters designate corresponding parts throughout the several views.

Referring now more particularly to Figure 1 of the drawings, F designates a section of wire fence having branches F1 while FC indicates the conventional fence controller which comprises a battery or other source of current together with some form of circuit breaker means for intermittently cutting off the supply of current to the fence in the well-known manner. The letters X show the preferred location of the detectors, generally, as shown, near the junction of each branch F1 and at some distance along each branch, by which arrangement a leak or short may be detected with the least amount of travel along the fence.

In Figures 2, 3 and 4 are shown several views of the insulator I into which the various elements of my detector are built. This insulator has terminal ears I2 having openings I3 adapted to be engaged by the adjoining ends F and F1 of the fence wire, while within the central or body portion I4 are openings for receiving the condenser C, the resistor R and the neon bulb N,

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the latter having an opening N1 above it through which it may be seen from the top. The detector in general is so formed that its center of gravity is well below the line of the fence so that it tends to remain in the position shown.

In the hook-up shown in Figure 5 of the drawings, the capacities of the condenser and the resistor indicated are exemplary only, and may vary through a wide range to suit different conditions. It will be understood that when no current flows along the fence, that is to say, when no short exists, there is little voltage drop across C, but when the current is diverted as by weeds and so forth, the voltage drop across C is high enough to light the bulb N which is fed by the current-limiting resistor R, connected as shown. Thus the neon bulb will glow along the path of current to the short while a detector located beyond the short will have no glow in its bulb. Obviously my device avoids the necessity of checking the entire fence to find one short or ground.

A switch S may be inserted as shown in Figure 2 of the drawings. By this arrangement it is contemplated that if, owing to the low current capacity of the controller FC, slight leakages occur along F and both branches of an intersection are shorted, neither of the adjacent bulbs N may be sufficiently illumined. If, however, one switch is opened, a more positive indication may be obtained on the other branch. The switch S may, if desired, be incorporated with the other elements within the insulator I.

Any ordinary resistor or coil may be substituted for the condenser C but it is considered that the indication may not be nearly as satisfactory.

Plugs P may be inserted at the ends of the openings which contain the several elements of the device, also a glass window W may cover the neon bulb, to afford protection against the elements.

In an alternative construction a condenser only may be inserted in the fence at each of the points X, and the parts R and N may form a portable detector to be applied to an individual condenser at any point by snap-on connections in the manner well known in the art. It will be observed that many miles of walking are saved by this invention.

My invention as above described is applicable to fences in which alternating current is employed. When adapting the same for use with continuous current, I may employ suitable resistors alone or connected in parallel with a condenser.

While I have herein described and shown a

preferred embodiment of my invention, it will be readily understood by those skilled in the art to which the same pertains that various changes and modifications in detail may be made to suit any particular or peculiar requirement without departing from the spirit of the invention as defined in the appended claims.

Having thus described my said invention, what I claim and desire to secure by Letters Patent of the United States is:

1. In an electric wire fence, detector means adapted to give warning of a total or partial grounding of the same, said means comprising a hollow strain insulator inserted between adjoining sections of said fence, a condenser contained within said insulator and connected to said sections, a neon bulb connected in parallel with said condenser, and a resistor in series with said bulb, whereby an excessive drop in the condenser will cause said bulb to glow.

2. In an electric wire fence, detector means adapted to give warning of a total or partial grounding of the same, said means comprising a hollow strain insulator inserted between adjoining sections of said fence, a condenser contained within said insulator and connected to said sections, a neon bulb connected in parallel with said condenser, and a resistor in series with said bulb, whereby an excessive drop in the condenser will cause said bulb to glow, said bulb and said resistor being also contained within said insulator.

3. In an electric wire fence, detector means

adapted to give warning of a total or partial grounding of the same, said means comprising a series of condensers inserted between adjoining sections of said fence, a neon bulb connectable in parallel with each of said condensers, and a resistor in series with said bulb, whereby an excessive drop in the condenser will cause said bulb to glow, said bulb and said resistor forming a separate unit including means for temporary connection to any of said condensers and in parallel therewith, for the purpose set forth.

4. In an electric wire fence having a number of separate branches, each branch having one or more detector means of the character described in claim 1, a series of switches arranged at the various intersections, whereby any particular section may be disconnected for testing purposes.

WILBUR HEIMKE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
346,609	Rousseau	Aug. 3, 1886
1,314,583	Feldkamp	Sept. 2, 1919
2,091,813	Hays	Aug. 31, 1937
2,196,046	Willis	Apr. 2, 1940
2,315,757	Wenger	Apr. 6, 1943
2,316,211	Agnew et al.	Apr. 13, 1943