May 9, 1939. F. BUCK 2,157,160

ELECTRIC FENCE CONTROLLER

Filed March 26, 1936

Fig. 1.

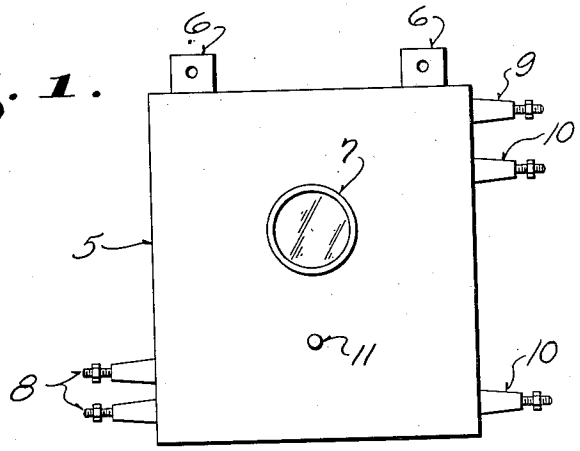


Fig. 3.

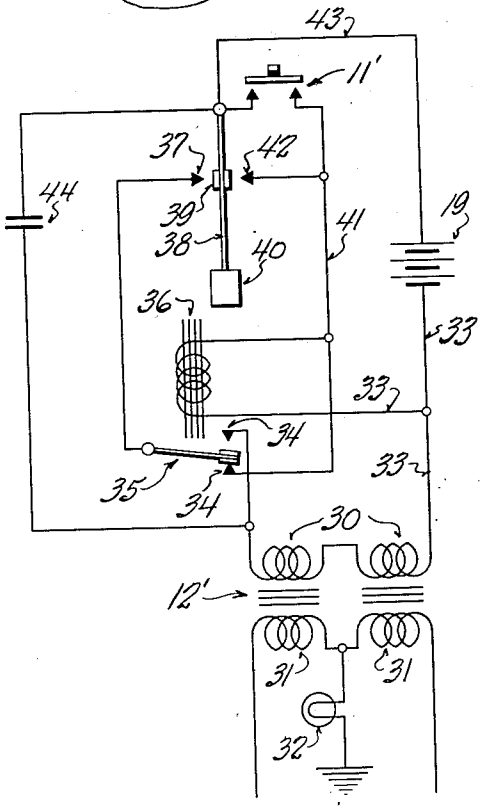
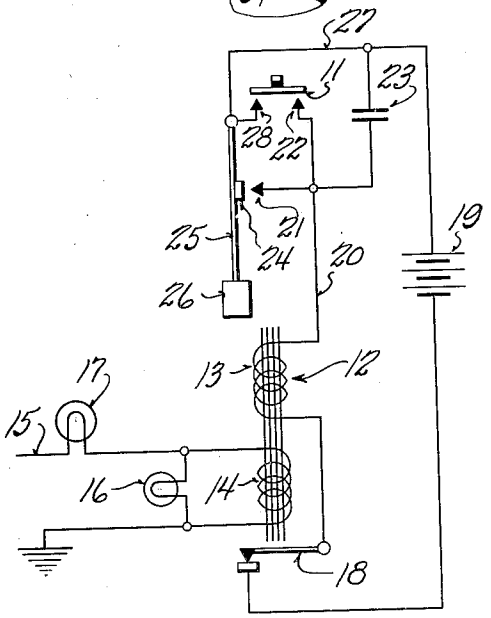


Fig. 2.



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ELECTRIC FENCE CONTROLLER

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2 Claims. (Cl. 175—265)

This invention relates to improvements in electric fences and has as an object to provide improved mechanism for intermittently energizing a fence wire.

As is well known, electric fences consist of one or more bare wires mounted on insulated supports, and mechanism for electrifying or energizing the wire so that an animal contacting the wire completes a circuit to the ground and receives a shock. Past experience has shown that it is desirable to apply the energizing current to the fence intermittently so that the animal has opportunity to free itself.

It is, therefore, a further object of this invention to provide simple means for periodically closing the energizing circuit to effect this desirable result.

While electric fences in the past have been energized both from commercial sources of alternating current and from batteries, some difficulty has been experienced with the battery operated equipment; and this invention, therefore, contemplates as another object the provision of an electric fence which is so designed that it may be economically and satisfactorily operated from a battery.

With the above and other objects in view which will appear as the description proceeds, this invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described, and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

The accompanying drawing illustrates two complete examples of the physical embodiment of the invention constructed in accordance with the best modes so far devised for the practical application of the principles thereof, and in which:

Figure 1 is a front plan view of a cabinet in which the energizing mechanism is enclosed;

Figure 2 is a diagrammatic illustration of one complete embodiment of the invention; and

Figure 3 is a diagrammatic illustration of another embodiment of the invention.

Referring now particularly to the accompanying drawing in which like numerals indicate like parts, the numeral 5 designates a cabinet generally of sheet metal construction in which the energizing mechanism of the fence is housed. The cabinet may be mounted in any suitable location by means of hanger straps 6. The front panel of the cabinet is provided with a window or opening 7 through which a signal lamp may be viewed for the purpose of indicating a grounded condition of the fence.

One side wall of the cabinet mounts two terminals 8 to which the conductors leading from a battery are attached. The opposite side wall has three terminals 9, 10, and 11 mounted thereon, the first two being for the attachment of fence wires and the latter providing a ground connection. A push button 11 exposed on the front panel provides means for setting the mechanism in operation as will be hereinafter described.

The actual circuit arrangement of the invention, as exemplified by the embodiment of the invention shown in Figure 2, comprises a transformer 12 having a primary 13 and a secondary 14. The secondary 14 has one side connected to a fence wire 15 and its other side grounded as shown. In practice, one end of the secondary is connected to the two terminals 9 and 10 on the cabinet and its other end is electrically connected to the terminal 10.

To provide an indication of whether or not the secondary 14 has voltage, a signal lamp 16 is connected across its terminals; and to indicate a grounded condition of the fence, a signal lamp 17 is interposed between the fence and the transformer. This latter signal is preferably mounted back of the window 7 in the cabinet so that a grounded condition of the fence may be observed from a distance.

One side of the primary is connected through a vibrator 18 with one side of a battery 19. This vibrator is positioned to be actuated by the transformer 12. The opposite side of the primary is connected by means of a conductor 20 with two stationary terminals 21 and 22 and also with one side of a condenser 23.

Cooperating with the contact 21 is a movable contact 24 carried by a pendulum 25. The lower weighted end 26 of the pendulum is positioned to be attracted by the energized transformer 12. With the swinging of the pendulum, the contact 24 is periodically engaged with the contact 21 to close the primary circuit inasmuch as the contact 24 is connected through part of the pendulum and a conductor 27 with the opposite side of the battery.

Hence, it will be seen that during operation with the pendulum swinging back and forth, the primary circuit is periodically closed and opened. At the same time, the vibrator 18 is set in operation to very rapidly open and close the primary circuit during each closure thereof effected by the pendulum. Hence alternating current is induced

in the secondary 14 to effect the desired energization of the fence.

The condenser 23, as shown, is connected across the contacts 21 and 24 to prevent arcing thereat; and to set the mechanism in operation, the push button switch 11 is provided to bridge the contact 22 and a cooperating contact 28 electrically connected with the conductor 27.

Another manner of utilizing the principles of this invention is illustrated in Figure 3. In this instance, the transformer 12' has split primaries 30 and correspondingly arranged secondaries 31. The outer ends of the secondaries are connectible with the terminals 9 and 10 for connection with the fence wire and the other ends of the secondaries are connected through a signal lamp 32 with the ground terminal 10.

One side of the series connected primaries is directly connected to the battery 19 by a conductor 33. The other side of the series connected primaries is connected with the upper one of two stationary contacts 34 of a vibrator 35 mounted in juxtaposition to a solenoid 36 to be actuated thereby. The movable contact of the vibrator is connected with a stationary contact 37 positioned at one side of a pendulum 38 to be engaged by the pendulum carried contact 39 as the pendulum swings.

The weighted end 40 of the pendulum is positioned to be attracted to the solenoid 36 when the same is energized. Energization of the solenoid is effected by having one side thereof connected with the battery 19 through conductor 33 and by connecting the opposite side thereof with the battery through a conductor 41 and either the pendulum switch 42 or the push button switch 11', both being connected with the battery through a conductor 43.

Hence, when the mechanism is in operation and the pendulum is swinging, every time engagement is effected between its contact 39 and the stationary contact 42, current flows through the solenoid 36 to attract the pendulum and also actuate the vibrator 35.

Every time the vibrator engages its upper contact 34 and the pendulum contact 39 engages the stationary contact 37, current flows through the primaries 30. Also, every time the contact 39 engages the stationary contact 37 and the vibrator contact engages the lower one of its two stationary contacts 34, current flows through solenoid 36.

Arcing at the pendulum and vibrator contacts is minimized by the provision of a condenser 44 connected across these contacts, as shown.

From the foregoing description taken in connection with the accompanying drawing, it will be readily apparent to those skilled in the art that this invention provides a novel manner of effecting intermittent energization of an electric fence and that by the circuit arrangements employed, economical and satisfactory battery operation is assured.

I claim:

1. Means for energizing an electric fence comprising: a transformer having primary and secondary windings; means for connecting the terminals of the secondary winding with a fence to be energized and the ground; a primary circuit connected with the terminals of the primary winding; a source of E. M. F. connected in said primary circuit; a vibrator for intermittently opening and closing the primary circuit with great rapidity so as to induce an alternating current in the secondary circuit; a pendulum-controlled switch for periodically and slowly opening and closing said primary circuit; and a single electromagnetic means energized from the primary circuit for actuating the vibrator and for keeping the pendulum in motion.

2. An electric fence controller comprising a transformer, a vibrator for interrupting the flow of current through the transformer, a vibrating circuit breaker connected in series with said vibrator, a core for the transformer adapted to attract the vibrator and the vibrating circuit breaker, and an armature for the vibrating circuit breaker of massive weight for periodically opening the circuit to the transformer after a time interval in which the vibrator has been actuated, the structure and arrangement being such that an alternating current will be delivered by the transformer and periodically this current will be interrupted by opening of the circuit breaker.

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