April 7, 1942. H. R. WISE 2,278,577

ELECTRIC FENCE CHARGER

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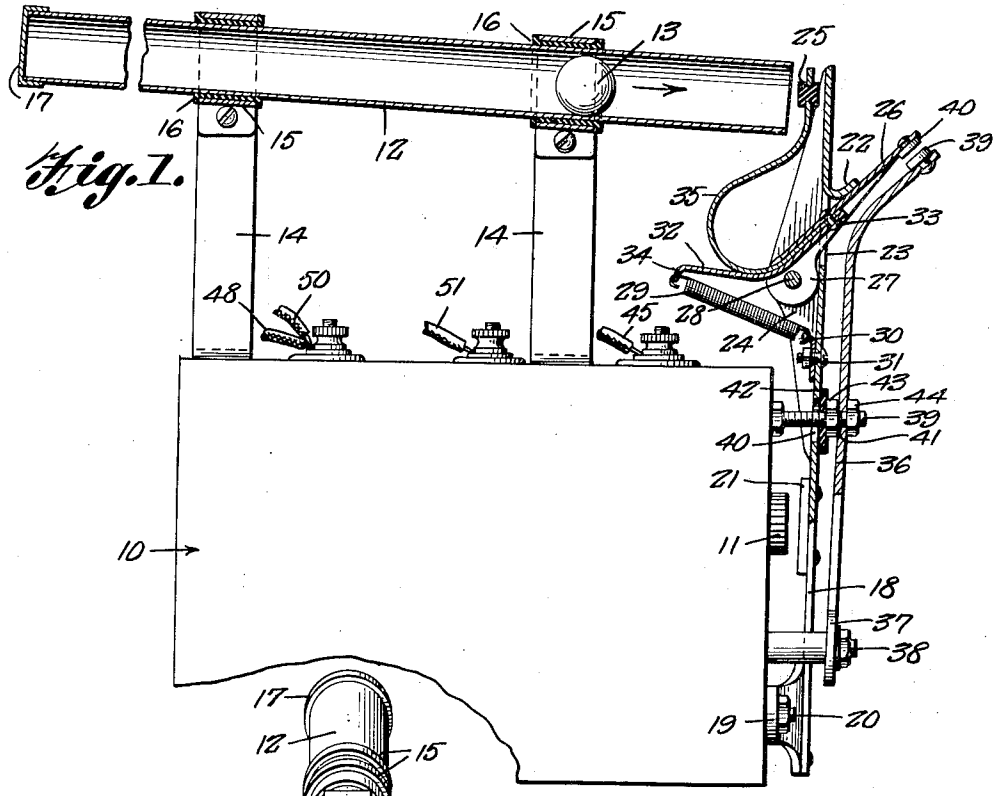


Fig. 1.

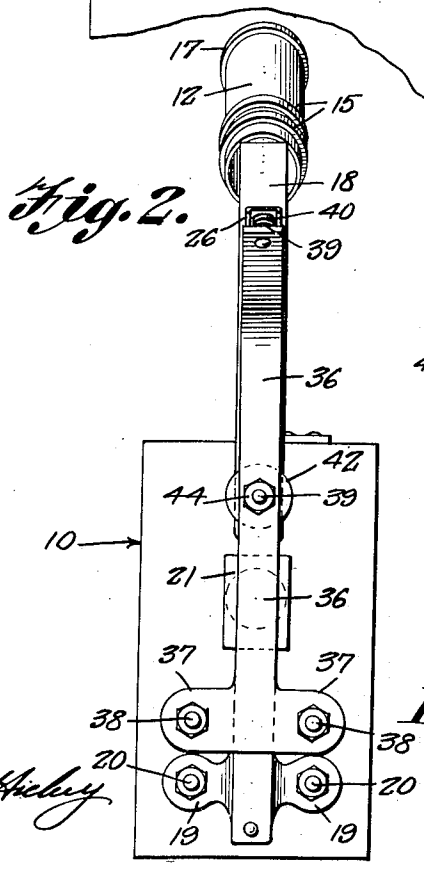


Fig. 2.

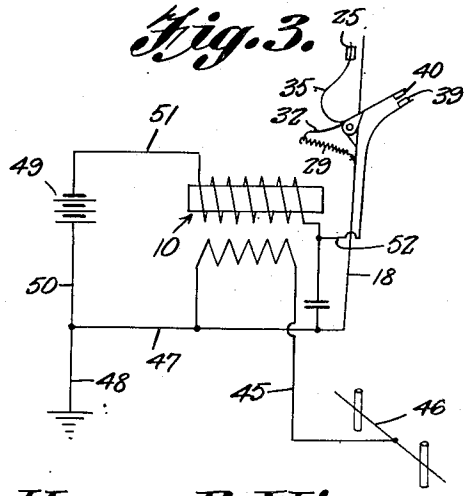


Fig. 3.

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WITNESS

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ELECTRIC FENCE CHARGER

Henry R. Wise, Durand, Ill.

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2 Claims. (Cl. 200—90)

This invention relates to electric fence chargers and has for an object to provide a circuit closer having the contact points disposed normally at an angle to the horizontal, and operated through the medium of a ball rolling down a runway and adapted to slide slightly on each other to maintain the points in a polished condition.

A further object is to provide a device of this character in which the vibrator of an induction coil carries one contact point that is hinged and is provided with a resilient curved lever having a rubber bumper in the path of the ball rolling down the runway so that the vibrator will be mechanically operated when the ball strikes the lever, without serious shock and jar, and also a quick break of the points will be assured to promote efficiency of the device in sending impulses at definite intervals through the fence wires thus promoting economy in the use of current.

A further object is to provide a device of this character which will be formed of few strong simple and durable parts, which will be inexpensive to manufacture and which will not easily get out of order.

With the above and other objects in view, the invention consists of certain novel details of construction and combination of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawing forming a part of this specification:

Figure 1 is a side elevation with parts broken away of an electric fence charger constructed in accordance with the invention.

Figure 2 is an end elevation of the fence charger looking towards the vibrator.

Figure 3 is a diagrammatic view of the electrical connections of the device.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, 10 designates an induction coil the core 11 of which extends exteriorly of the induction coil. A tube 12 is disposed above the coil, longitudinally thereof, and is inclined downwardly toward the vibrator end of the induction coil. A ball 13 is disposed within the tube to roll up and down the tube. The tube is supported above the coil through the medium of a pair of upright brackets 14 having eyes 15 at the upper ends receiving the tube and provided with insulating sleeves 16. The upper end of the tube is closed by a cap 17 and the lower end of the tube is open.

A vibrator 18, formed of resilient material, is provided at the bottom with perforated ears 19, through which bolts 20 are passed to secure the vibrator to the casing of the induction coil. The vibrator is provided on its inner face with a metallic armature 21 which confronts the core 11. The upper end portion of the vibrator is provided with a struck out stop lug 22 which forms an opening 23 in the vibrator where the material is struck out. On opposite sides of the opening the vibrator is provided with hinge ears 24. A rubber bumper 25 is secured through the top of a resilient lever 35 and confronts the open end of the tube.

A circuit breaker arm 26 is provided with hinge ears 27 through which, and the hinged ears 24, a pivot pin 28 is passed to pivotally secure the circuit breaker arm to the vibrator. The circuit breaker arm extends upwardly and outwardly at an angle of about forty-five degrees to the arm and projects through the opening 23. The arm normally is held against the stop lug 22 by a helical spring 29 disposed below the pivot pin 28 and connected at one end to the vibrator arm by a perforated lug 30 which is secured to the vibrator through the medium of a bolt 31. The spring extends rearwardly from, and is spaced from, the pivot pin 28. A bracket 32 is secured at one end to the underneath face of the circuit breaker arm 26 by a rivet 33 and is hooked at its free end through a loop formed in the free end of the spring as shown at 34.

A resilient lever 35, of reversely curved contour, is secured at one end to the circuit breaker arm by the rivet 33. The free end of the lever is interposed between, and spaced from, the vibrator arm 18 and the lower open end of the tube 12.

A conductor bar 36 of rigid construction is provided at the lower end with perforated ears 37, best shown in Figure 2, which are bolted to the induction coil casing, as shown at 38. The conductor bar is disposed outside the vibrator 18 and the upper end of the bar is bent obliquely upwardly and outwardly to extend parallel with the circuit breaker arm 26.

A contact point 39 is disposed on the top face of the upper end of the conductor bar and a similar contact point 40 is disposed on the lower face of the circuit breaker arm 26. The contact faces of these contact points consequently are disposed

obliquely to the horizontal. The purpose of this is to provide a slight rubbing together of these faces when the vibrator arm 18 moves toward the core 11, this rubbing serving to polish the contact faces of the contact points.

A threaded adjusting pin 39 is secured at one end to the casing of the induction coil and is engaged through an opening 40 formed in the vibrator, and through an opening 41 formed in the conductor bar. An insulating washer 42 is disposed on the pin and bears against the outer face of the vibrator.

A nut 43 is threaded on the pin and bears against the washer and a second nut 44 is threaded on the pin and bears against the outer face of the conductor bar. Adjustment of these nuts permits adjustment of the vibrator to vary the distance between the resilient lever tip and the lower end of the tube, and also to regulate the distance and space between the core 11 of the induction coil and the armature 21 of the vibrator.

As shown diagrammatically in Figure 3 one end of the secondary winding of the induction coil is connected by wire 45 to the fence wire 46 to be charged. The other end of secondary winding is connected to a wire 47, which is grounded at one end as shown at 48, and the opposite end of which is connected to the vibrator 18. One side of the battery 49 is connected by a wire 50 to the grounded wire 47. The other side of the battery is connected by a wire 51 to one end of the primary winding of the induction coil. The other end of the primary winding is connected by wire 52 to the conductor bar 36. A condenser 53 is connected across the wires 47 and 52.

Each time the ball 13 rolls down the inclined tube 12 it strikes against the rubber bumper 25 mounted through the arm 35 and rocks the circuit breaker arm to engage the contact 40 with the contact 39 and close a circuit through the primary winding of the induction coil. The impact of the ball against the free end of the lever is absorbed by the rubber bumper 25. At the instant the ball 13 is stopped, the core of the coil attracts the armature of the vibrator, and moves the vibrator to impinge the resilient lever 35 against the ball to drive it back up the tube for the next operation. The contact points 39 and 40 are separated by this movement of the vibrator, assisted by the spring 35, and an electrical impulse is impressed on the fence 46. When the contact points separate the circuit through the primary winding of the coil is broken and the vibrator returns to normal position.

A condenser may be attached across posts 38 and 20.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

1. In an electric fence charger, the combination with a coil, a tube above the coil inclined downwardly towards one end of the coil, a ball adapted to roll freely up and down the tube, a resilient vibrator operated by the coil, a spring controlled circuit breaker arm pivoted to the vibrator, a stop on the vibrator against which said arm is normally held by its controlling spring, a resilient lever carried by the breaker arm and having its free end disposed between the lower end of the tube and the upper end of the vibrator and adapted to be struck by the ball and engage the vibrating arm to move the same to closing position, a rigid conductor bar supported on the outside of the resilient vibrator, and a contact on the upper face of the free end of the rigid conductor bar for engagement with the contact carried by the spring controlled circuit breaker arm.

2. In an electric fence charger, the combination with a coil, a tube above the coil inclined downwardly towards one end of the coil, a ball adapted to roll freely up and down the tube, a resilient vibrator operated by the coil and having its upper end opposite the lower end of the tube and spaced therefrom, a spring controlled circuit breaker arm pivoted to the vibrator, a stop for the vibrator, a resilient lever carried by the breaker arm disposed between the lower end of the tube and the upper end of the vibrator, a rubber bumper on the upper end of the lever and adapted to be struck by the ball to cause the same to engage the vibrating arm to move the same to closing position, a rigid conductor bar supported close to the resilient vibrator, and a contact on the upper face of the free end of the rigid conductor bar for engagement with the contact carried by the spring controlled circuit breaker arm.

HENRY R. WISE.