

June 6, 1950

V. FRANKLIN

2,510,337

CALF WEANER

Filed May 21, 1948

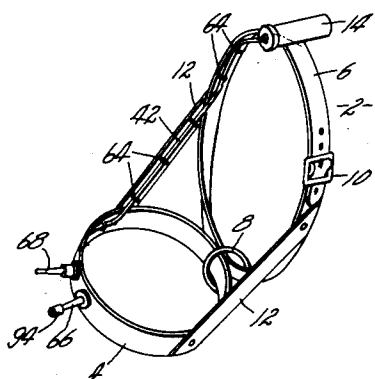


Fig. 1

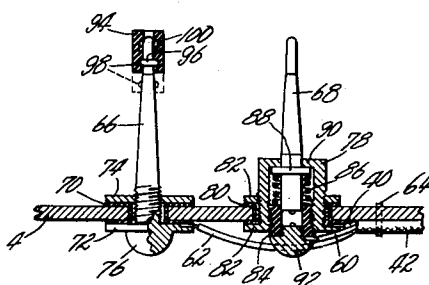


Fig. 2

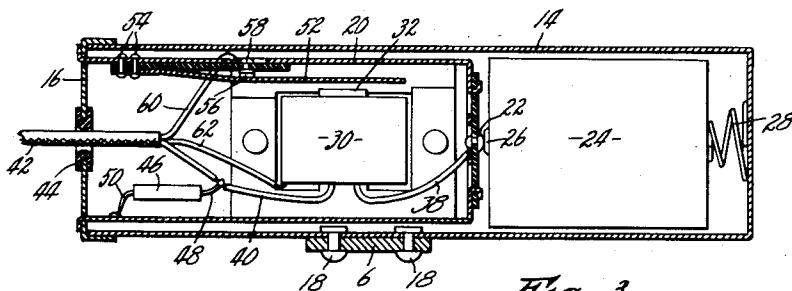


Fig. 3

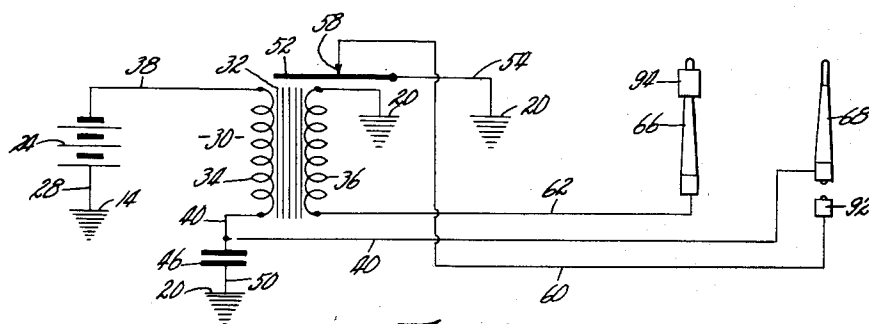


Fig. 4

INVENTOR,
Virgil Franklin,
BY Roy L. Hamilton,
Attorney.

UNITED STATES PATENT OFFICE

2,510,337

Calf Weaner

Virgil Franklin, Kansas City, Kans.

Application May 21, 1948, Serial No. 28,502

7 Claims. (Cl. 119—130)

1

This invention relates to new and useful improvements in calf and colt weaners, and has particular reference to calf and colt weaners of the electric shock type.

The principal object of the present invention is the provision of an apparatus for generating high voltage, low amperage electric current adapted to be mounted on a calf or colt halter and connected with a pair of outwardly projecting fingers carried on the nose strap of said halter in such a manner that when a calf approaches a cow, the fingers will contact the cow and will be operated to close a switch to pass said high voltage current through the body of the calf.

Another object is the provision, in a calf weaner of the character described, of adjustable means whereby the electric current may be passed through the calf alone, or through both the calf and the cow.

Other objects are simplicity and economy of construction, convenience of use and efficiency of operation.

With these objects in view, as well as other objects which will appear in the course of the specification, reference will be had to the drawing, wherein:

Figure 1 is a perspective view of a calf halter of representative type, showing a calf weaner embodying the present invention attached thereto.

Fig. 2 is an enlarged longitudinal mid-section through the forward portion of the halter nose strap, showing the mounting of the electrodes therein, and with the insulating sleeve shown extended in solid lines and retracted in dotted lines.

Fig. 3 is an enlarged longitudinal mid-section through the induction coil housing.

Fig. 4 is a diagram of the electrical circuit employed in the device.

Like reference numerals apply to similar parts throughout the several views, and the numeral 2 applies to a calf halter of any suitable type, that shown for the purposes of illustration comprising a nose strap 4 made of leather or other pliable material and forming a loop adapted to be passed about the nose of the calf, and a headstall 5 comprising a leather strap loosely connected to said nose strap by a ring 8 and adapted to be passed over the top of the calf's head behind the ears. The ends of said headstall strap are joined by buckle 10. A bracing strap 12 is connected to nose strap 4 at each side thereof, extends upwardly and rearwardly therefrom, and is connected at its opposite end to headstall 6.

2

An induction coil housing 14 is securely connected to a convenient portion of the halter, for example to the upper portion of the headstall strap as shown in Fig. 1. As shown in Fig. 3, housing 14 comprises a hollow tubular metallic member closed at one end and provided at its opposite end with a removable metallic cover 16, said tubular member being firmly attached to strap 6 by any suitable means such as rivets 18. A metallic frame 20 is securely mounted on the inner surface of cover 16, and extends axially into housing 14. A contact member 22 is carried rigidly at the inner end of said frame but is electrically insulated therefrom. A battery 24 of the dry cell type is carried in the inner end portion of housing 14 with the center terminal 26 thereof contacting member 22. A compression spring 28 disposed between the base of the battery and the end of the housing grounds the battery casing to housing 14 and urges terminal 26 against contact member 22.

An induction coil 30 is carried in frame 20, said induction coil being of standard design and comprising an iron core 32 about which is wrapped a primary coil 34, comprising a few turns of heavy wire, and a secondary coil 36, comprising many turns of fine wire. One terminal of the primary coil is connected to contact member 22 by wire 38, while a wire 40 connected to the other terminal of the primary coil enters a conduit 42 which passes outwardly from housing 14 through an insulating eyelet 44 carried in cover 16. A condenser 46 carried in housing 14 has one terminal connected to wire 40 by wire 48 and its opposite terminal grounded to frame 20 by wire 50.

A resilient armature 52 is rigidly attached to frame 20, and electrically grounded thereto, by means of rivets 54. The free end of said armature is disposed adjacent core 32 and is adapted to be moved toward said core by electromagnetic force whenever current is passed through the primary coil. A contact 56 carried by said armature is adapted normally to rest against a contact 58 carried by but insulated from frame 20. A wire 60 is connected to contact 58 and enters conduit 42. A wire 62 is connected to one terminal of secondary coil 36, and enters conduit 42. The opposite terminal of the secondary coil is grounded to frame 20. Conduit 42, carrying wires 40, 60, and 62 extends along convenient straps of halter 2, as shown in Fig. 1, to a point adjacent the forward portion of nose strap 4, being attached at intervals to said straps by suitable means such as staples 64.

A pair of outwardly projecting finger-like electrodes 66 and 68 are carried in adjacent relation at the forward portion of nose strap 4. Electrode 66 extends through an insulating eyelet 79 carried in said nose strap, having an enlarged head 72 formed at its inner end adjacent the inner surface of strap 4, and being externally threaded to receive a retaining nut 74 adjacent the outer surface of said strap. Head 72 is formed to present an inwardly projecting boss 76 adapted to contact the nose of the calf. Wire 62 is connected with electrode 66. Electrode 68 is carried slidably in a tubular holder 78 which is open at each end and extends through an insulating eyelet 80 carried in strap 4. Said holder is provided at its inner end with an outwardly extending flange 82 adjacent the inner surface of the strap, and is externally threaded to receive a retaining nut 82. A tubular insulating member 84 is fitted securely in the inner end portion of holder 78 and is adapted to receive slidably the inner end portion of electrode 68. Said electrode is urged outwardly by a compression spring 86 bearing at one end against member 84 and at its opposite end against a flange 88 formed on the electrode. The outward movement of electrode 68 is limited by the engagement of flange 88 with a shoulder 90 formed by holder 78. A contact plug 92 is screwed into insulating member 84, and is formed externally to present a boss adapted to rest against the nose of the calf. Electrode 68 is held out of contact with plug 92 except when pressed inwardly against the force of spring 86. Wire 49 is connected to electrode 68 through holder 78. Wire 60 is connected to plug 92.

In operation, the halter is placed on the calf in the usual manner and no shock results since the primary circuit of the induction coil is broken. However, when the calf approaches the cow for suckling, electrodes 66 and 68 contact the cow and electrode 68 is pushed inwardly to contact plug 92. Current then flows from battery 24 through wire 38, primary coil 34, wire 40, electrode 68, plug 92, wire 60, armature 52, and is grounded back to the battery. Primary coil 34 is thus energized and armature 52 is attracted by core 52, separating contacts 56 and 58 to break the circuit. The core is then demagnetized and armature 52 is returned to its normal position by its own resilience, re-establishing the circuit and starting a new cycle. Thus the primary circuit is made and broken very rapidly, producing an intermittent magnetic field around secondary coil 36 and inducing a high voltage current therein. This current flows through wire 62 to electrode 66 and thence to the body of the cow through the tip of the electrode and to the body of the calf through boss 76. The current reenters electrode 68 from the body of the cow and plug 92 from the body of the calf, and thence flows through wire 60, armature 52, and is grounded to the secondary through conductor 54 and frame 20. The resultant shock is of course extremely distasteful to the animals and will effectively keep them apart. The shocking current continues only so long as electrode 68 is depressed. The device is humane and can not harm the animals since although the voltage is high, the amperage is extremely low.

When it is not desired to shock the cow, but only the calf, a sleeve 94 of rubber or other elastic insulating material may be placed over the tip of electrode 66 for adjustable movement therealong. A peripheral rib 96 formed on the electrode is adapted to be engaged in either of two

internal peripheral grooves 98 and 100 by manually sliding the sleeve along the electrode. When rib 96 is engaged in groove 98, as shown in solid lines in Fig. 2, sleeve 94 extends beyond the tip of the electrode, thus preventing said electrode from contacting the cow. When the sleeve is retracted so that rib 96 engages groove 100, as shown in dotted lines in Fig. 2, the tip of the electrode extends outwardly from the sleeve and is adapted thereby to contact and pass a current through the cow.

The function of condenser 46 is the production, by its discharge, of a reverse surge of current through primary coil 34 whenever the primary circuit is broken by armature 52. This causes a more rapid breakdown of the magnetic field about the secondary coil, and thus causes a higher voltage to be induced therein.

While a specific embodiment of my invention has been disclosed, it is apparent that many minor changes in design and operation could be made without departing from the spirit of the invention.

What I claim is:

25 1. An animal weaner comprising an apparatus for generating a high tension electrical current including a normally open, high tension circuit and adapted to be mounted on a calf halter, a pair of terminal electrodes disposed in said high tension circuit and carried by said halter, said electrodes each contacting said calf and adapted to contact a cow as the calf approaches her, and adjustable means operatively associated with one of said electrodes whereby said high tension circuit may be closed to selectively pass current through both the cow and the calf or through only the calf.

40 2. An animal weaner comprising an apparatus for generating a high tension electrical current including a normally open, high tension circuit and adapted to be mounted on a calf halter, and a pair of outwardly projecting terminal electrodes disposed in said high tension circuit and carried by said halter, said electrodes contacting the body of the calf at their inner ends and adapted to contact the body of the cow at their outer ends, one of said electrodes being movably mounted and operable by contact with the body of a cow to close an electrical switch to energize said high tension generating apparatus and to close said high tension circuit, thereby passing said high tension current through both the calf and the cow.

55 3. An animal weaner comprising an apparatus for generating a high tension electrical current including a normally open, high tension circuit and adapted to be mounted on a calf halter, a pair of terminal electrodes disposed in said high tension circuit and carried by said halter in contact with the body of the calf, one of said electrodes being movably mounted and operable by contact with the body of a cow to close an electrical switch to energize said high tension generating apparatus and to close said high tension circuit, and adjustable means for insulating one of said electrodes from contact with said cow, whereby said high tension current flows only through the body of the calf.

70 4. An animal weaner comprising an apparatus for generating a high tension electrical current including a normally open, high tension circuit and adapted to be mounted on a calf halter, a pair of terminal electrodes disposed in said high tension circuit and carried by said halter in contact with the body of the calf, one of said

5

electrodes being movably mounted and operable by contact with the body of a cow to close an electrical switch to energize said high tension generating apparatus and to close said high tension circuit, and an insulating sleeve carried on the outer end portion of one of said electrodes and adjustably movable therealong to cover or expose the tip of said electrode, thereby selectively preventing or permitting electrical contact between said electrode and the body of the cow.

5. An animal weaner comprising a housing adapted to be fixed to a calf halter, an induction coil of the make and break type carried in said housing, an electric battery carried in said housing and connected in series with the primary winding of said coil, a normally open switch in said primary circuit, a pair of electrodes carried by said halter, one of said electrodes being connected to one terminal of the secondary winding of said induction coil and the other of said electrodes being connected to the other terminal of said secondary winding through said normally open switch, said electrodes resting against the body of the calf and projecting outwardly therefrom, one of said electrodes being movably mounted and operable by contact with the body of a cow to close said switch.

6. An animal weaner comprising a housing adapted to be fixed to a calf halter, an induction coil of the make and break type carried in said housing, an electric battery carried in said housing and connected in series with the primary winding of said coil, a normally open switch in said primary circuit, a pair of outwardly projecting electrodes carried on the nose strap of said halter, one of said electrodes being connected to one terminal of the secondary winding of said induction coil and the other of said electrodes being connected with the other terminal of said secondary winding through said normally open switch, said electrodes resting at their inner ends

6

against the face of the calf or colt and adapted to contact the body of the cow or mare at their outer ends, one of said electrodes being movably mounted and operable by contact with the body of the cow or mare to close said switch.

7. An animal weaner comprising a housing adapted to be fixed to a calf halter, an induction coil of the make and break type carried in said housing, an electric battery carried in said housing and connected in series with the primary winding of said coil, a normally open switch in said primary circuit, a pair of outwardly projecting electrodes carried on the nose strap of said halter, one of said electrodes being connected to one terminal of the secondary winding of said induction coil and the other of said electrodes being connected with the other terminal of said secondary winding through said normally open switch, said electrodes resting at their inner ends against the face of the calf or colt and adapted to contact the body of the cow or mare at their outer ends, one of said electrodes being movably mounted and operable by contact with the body of the cow or mare to close said switch, and an insulating sleeve carried on the outer portion of one of said electrodes and normally adjustable therealong to cover or expose the tip of said electrode, thereby selectively preventing or permitting electrical contact between said electrode and the body of the cow.

VIRGIL FRANKLIN.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
2,177,789	Sacker	Oct. 31, 1939
2,208,852	Mongan	July 23, 1940
2,212,160	Kelly	Aug. 20, 1940
2,263,503	Kennedy	Nov. 18, 1941