

Feb. 17, 1953

LE ROY M. JOHNSTON

2,628,592

ELECTRICAL CALF WEANER

Filed Jan. 19, 1950

2 SHEETS—SHEET 1

Fig. 1.

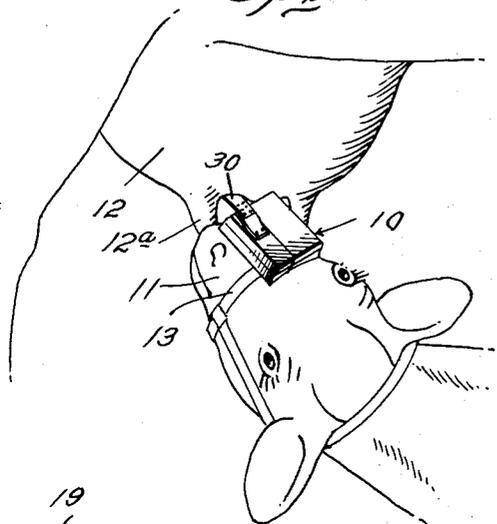


Fig. 6.

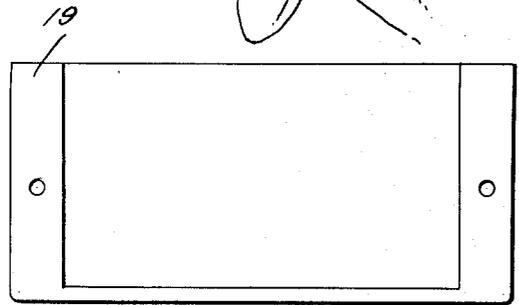
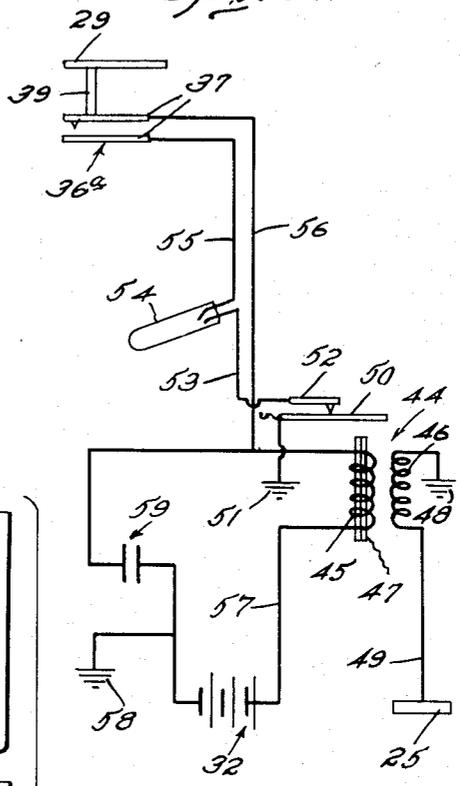
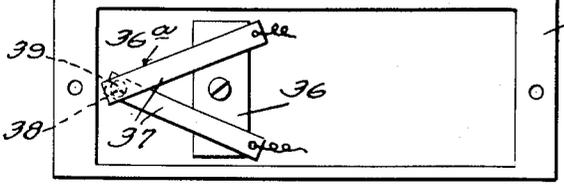
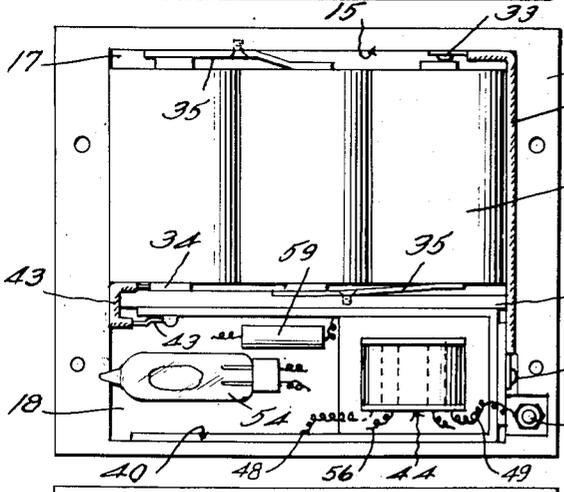
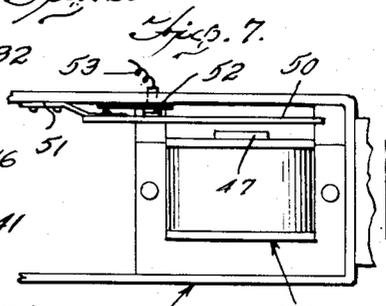


Fig. 2.



Inventor
Le Roy M. Johnston

By
Wilfred Lawson

Attorney

Feb. 17, 1953

LE ROY M. JOHNSTON

2,628,592

ELECTRICAL CALF WEANER

Filed Jan. 19, 1950

2 SHEETS—SHEET 2

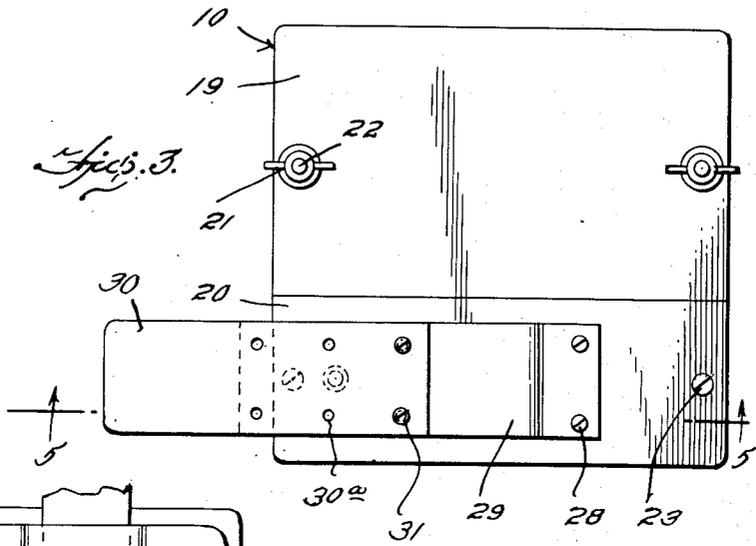


Fig. 3.

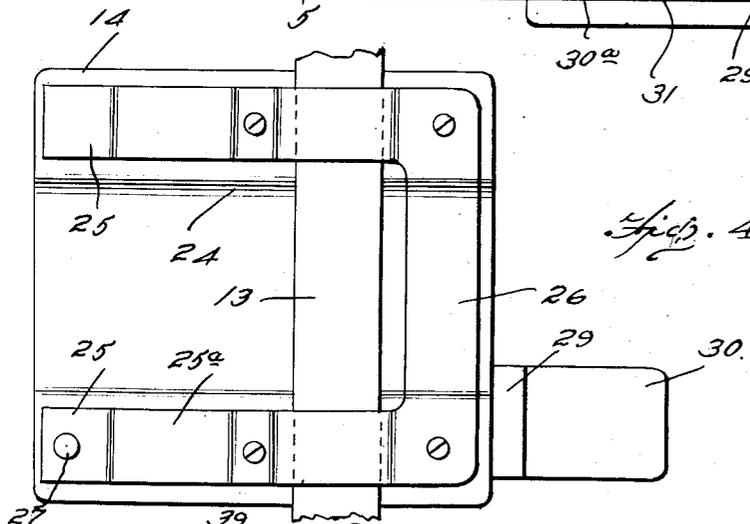


Fig. 4.

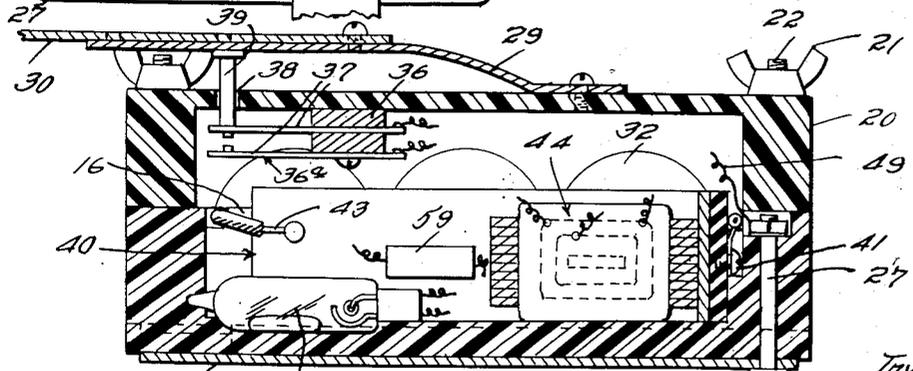


Fig. 5.

Inventor
Le Roy M. Johnston

Wilfred Lawson
Attorney

UNITED STATES PATENT OFFICE

2,628,592

ELECTRICAL CALF WEANER

Le Roy M. Johnston, Chehalis, Wash.

Application January 19, 1950, Serial No. 139,471

2 Claims. (Cl. 119—130)

1

This invention relates generally to improvements in calf weaning devices and is directed particularly to a device of this character which is electrically operated.

A principal object of the present device is to provide an electrically operated calf weaning device which is secured upon the nose of the animal so that it is constantly carried by the animal and which is designed in a novel manner whereby it is only made to function when the calf elevates or tilts its nose in the usual or characteristic manner in its effort to take the cow's teat and consequently the device will not be made to function as a result of the animal striking or pressing its nose against the body of the cow or against any other object or by any action of the cow as in nuzzling or fondling the calf.

Another object of the invention is to provide an electrically operated calf weaning device which in addition to being constructed so that it will only operate when tilted in a certain manner by the action of the calf endeavoring to reach the cow's teat, is designed to sting or shock both the calf and the cow so that the calf will be discouraged from attempting to suckle the cow and also the cow will be made to avoid the advances of the calf or another cow.

A further object of the invention is to provide a calf weaning device of the character above set forth, which may be compactly made of relatively light weight and which, at the same time, is designed so as to give quite a strong shock to both animals while using small dry cell batteries of the type commonly used in pocket flashlights.

Other objects and advantages of the invention will become apparent as the description of the same proceeds and the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of specification, with the understanding, however, that the invention is not to be limited to the exact details of construction shown and described since obvious modifications will occur to a person skilled in the art.

In the drawings:

Figure 1 is a view illustrating the application of the present device, showing the same upon the head of a calf in suckling position and showing the contact of one electrode with the udder of the cow.

Figure 2 is a plan view of the device with the two cover sections removed.

Figure 3 is a top plan view of the device showing the cow contacting electrode.

2

Figure 4 is a bottom plan view of the device showing the electrodes which contact the head or nose of the calf or cow upon which the device is secured.

Figure 5 is an enlarged sectional view taken substantially on the line 5—5 of Figure 3.

Figure 6 is a circuit diagram of the shocking mechanism.

Figure 7 is a view of a part of the underside of the transformer unit and frame showing the vibrator.

Referring more particularly to the drawings the numeral 10 generally designates the casing or box of the weaning device, such device being shown in Figure 1 mounted in position upon the nose 11 of a calf and showing the calf's head in suckling position under the udder 12 of the cow.

As shown the device is secured in place by the halter strap 13 which encircles the nose of the calf, the strap being attached to the casing of the device in the manner hereinafter set forth.

The casing 10 of the device comprises a bottom half 14 formed to provide the chamber 15 which is horizontally divided by a partition 16 to provide the battery compartment 17 and a compartment 18 for the electrical mechanism. The top half of the box or receptacle in which the mechanism is placed comprises the battery cover 19 and the mechanism cover 20. These two covers are placed side by side as shown in Figure 3, with the battery cover 19 held in place by easily removable wing nuts 21 engaging threaded studs 22 carried by the wall of the bottom part 14, while the mechanism cover 20 is more tightly or substantially secured in place by the screws or bolts 23.

As shown in Figure 4 the underside of the bottom half 14 of the casing or box has a channel 24 formed therein so that the device will be saddled on the nose of the animal.

Secured to the underside or bottom of the lower half 14 of the casing, at each side of the saddle recess or channel are the two metal strips 25 which are electrically coupled at one end by the cross strip 26. These strips are preferably in the form of thin copper bands or ribbons.

The two strips 25 are each provided with offset portions 25a which provide in association with the adjacent part of the casing, a loop for the reception of the halter strap 13. Thus it will be seen that when the strap 13 is in place to secure the device onto the animal's nose, the metal electrode strips 25 and 26 will be in firm contact with the animal's skin so that the de-

sired transfer of electrical energy may take place in the manner hereinafter described.

As shown in Figure 5 a terminal post 27 is electrically connected with the electrode 25 for connection in the electric circuit of the mechanism as hereinafter described.

Upon the top of the mechanism compartment cover 20, as best shown in Figures 3 and 5, is secured by means of the screws 28, one end of a resilient or flexible electrode 29, the other end and major portion of which is spaced from the top of the cover 20 as shown in Figure 5. This electrode 29 carries as a part thereof, an adjustable extension strip or electrode 30 which is attached by removable screws 31, the strip 30 being provided with several pairs of apertures 30a to facilitate longitudinal adjustment of the strip on the fixed part 29 of the electrode.

As shown the free end of the fixed part 29 of the electrode and the extension strip 30, extend a substantial distance beyond the adjacent side of the box or casing so that the electrode will be in a position to firmly electrically contact the cow's udder 12 when the calf endeavors to take the teat 12a.

It is to be particularly pointed out that one of the novel features of the present invention is that the electrical mechanism is designed and placed in the casing 10 in such a manner that when the casing is secured to the top of the calf's nose, the device will be tilted or tipped to a prescribed position by the natural raising of the nose of the calf in the act of grasping the teat. Because of this the device can only function when the nose of the calf is lifted in this characteristic manner so that it is not possible for the calf or another animal to be shocked under any other circumstances.

It will also be noted upon reference to Figure 1 that when the calf has its head in suckling position the extended electrode 30 will be pressed against the udder of the cow and the cow as well as the calf will receive the desired shock.

The compartment 17 is designed to receive three of the small cylindrical batteries 32 of the type commonly used in a pocket flashlight and in order that these batteries may be connected together in series there are provided the two opposite terminals 33 and 34 with intermediate conductor strips or bars 35 as shown.

Secured to the underside of the cap or cover 20 and separated by the two insulation blocks 36, are the two blades 37 of a switch unit, the free ends of the blades being in overlapping relation and biased to maintain a separated condition as shown in Figure 5. This switch, which is generally designated 36a has the spaced outer ends of the blades in line with an opening 38 formed through the top wall of the cover 20 and freely movable through this opening 38 is a metal conductor pin 39 which is secured at one end to the underside of the electrode 29 as shown in Figure 5, so that when this electrode is pressed in against the cover 20 the pin 39 will engage a blade 37 and force the two blades together into electrical contact.

The switch 36a together with the electrodes 25 and 29 form a part of the electrical mechanism about to be described.

The numeral 40 designates an elongated substantially U-shaped metal frame which forms the ground for certain wires of the electrical apparatus. This frame is fitted into the compartment 18 as shown in Figure 2 and has the closed end thereof adjacent to the electrode terminal post

27. This closed end of the ground frame 40 carries a terminal screw 41 which is insulated from the frame and this screw is connected by a wire 42 with a battery terminal, here shown as the terminal 33.

The other battery terminal, designated 34, is connected by the wire 43 to the metal frame 40.

Positioned within the closed end portion of the frame 40 is an electro-magnet transformer unit which is generally designated 44. As shown in Figure 6 this unit comprises the primary and secondary coils 45 and 46 respectively and a magnet core 47.

The secondary coil or winding 46 of the transformer is grounded at one end to the frame, as indicated at 48, while the other end is electrically connected as indicated at 49, to a terminal post 27.

Resiliently mounted at one end upon the inner side of one leg of the U-shaped frame 40 is a vibrator armature 50 which is grounded to the frame 40 as at 51 while one end of this armature is spaced from an end of the magnet core 47. Interposed between the part of the frame 40 supporting the armature 50 and the armature is the contact 52 which is insulated from the frame 40. The spring mounting for the armature 50 normally urges the armature toward and into electrical engagement with the contact 52. This contact 52 is connected by the wire 53 with one side of a mercury switch 54 while the other side of such mercury switch is connected by the wire 55 with a switch blade 37.

The other switch blade 37 is connected by the wire 56 with one side of the primary winding 45 while the opposite side of the winding is connected by the wire 57 with one side of the battery or current source through the terminal 41. The other side of the battery is grounded as at 58 to the frame and there is connected across the battery and winding 45 the condenser 59.

In the assembly of the electrical mechanism in the compartment 18 the mercury switch 54 is so positioned that the terminals thereof will not be electrically connected unless the apparatus as a whole is tilted to a prescribed position. In other words it will be seen upon reference to Figure 5 that the long axis of the mercury switch envelope is substantially parallel with the electrode extension 30 so that as long as the apparatus is substantially horizontal or if it is tilted so that the extension 30 of the electrode 29 is directed downwardly, the mercury switch will not be closed. If the element 30 is directed upwardly then the mercury switch will be closed but the circuit of the primary winding 45 of the transformer will not be energized unless, at the same time, the extension 30 is pressed upwardly against some body so as to force the terminal 39 inwardly against one of the blades 37 to force the blades of the switch 36a together. It will thus be seen that the apparatus will not be put into operation, when it is strapped to the top of the calf's head as shown in Figure 1, unless the calf elevates its nose and at the same time presses the electrode extension 30 or the electrode 29 upwardly against some object and this action is not likely to take place except in the act of the calf attempting to suckle the cow. It will also be seen that even if this action did take place the animal carrying the apparatus would not be shocked unless the object against which the extension 30 is pressed is of the character to conduct electric current and some part of the calf's body would at the same time have to be in contact with such object.

It will be seen from the foregoing that in the operation of the present device, if the calf or other animal having the device secured to its head, attempts to take the cow's teat, in the act of grasping the teat the electrode extension 30 will be pressed up against the udder and this will force the pin 39 in to close the switch 36a, the pin also electrically connecting the electrode 29 with a blade of the switch. At the same time the tilting of the animal's head will cause the mercury switch 54 to close. With the two switches closed in this manner it will be seen that an electric circuit will be established including the primary winding of the transformer, the battery, the vibrator which comprises the armature 50 and contact 52, and the switches 36a and 54. This will magnetize the core 47 and pull the armature 50 down thus breaking the circuit and this will be repeated as long as both of the switches 36a and 54 remain closed.

The opening and closing of the primary circuit will set up an induced current of high voltage in the secondary 46 and this high voltage current will pass between and through both animals by way of the electrodes 25 and 29. Thus it will be seen that the device will be ineffective if the animals' bodies are not in contact when the switches are closed and also if the electrode extension 30 or the electrode 29 is not pressed against the body of the cow. Also it will be readily apparent that the cow will receive a shock in addition to the calf or other animal carrying the apparatus so that the device is doubly effective in that it discourages the calf or other animal from suckling and also discourages the cow from permitting the calf to suckle.

While the casing 10 may be made of any suitable material it is contemplated to make it of a suitable light plastic as such material is readily

molded, is light in weight and at the same time has sufficient strength and rigidity, and it is also non-conductive of electricity.

I claim:

1. In an electrical calf weaner, a receptacle to be mounted on the nose of a calf between its nostrils, an electrode mounted on the lower side of said receptacle for contact with the calf, a second electrode mounted on the upper side of said receptacle for contact with the mother cow, a shock producing vibrator, a battery in circuit with said electrodes, said vibrator and a ground, and a normally open switch in said circuit adapted to close automatically upon the up-tilting of the head of the calf into teat suckling position and the contact of the second electrode with the mother cow, said vibrator, the battery, and said switch being housed within said receptacle.

2. The invention as defined in claim 1, with the said switch being in the form of a short length of tube, of glass or other insulating material, and closed at both of its ends, a pair of circuit terminals projecting inwardly of one end of the tube, and a body of mercury within the tube to bridge said terminals when the normal angular position of the tube and receptacle changes to that defined by the angle of up-tilt of the head of the calf.

LE ROY M. JOHNSTON.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
2,212,160	Kelly -----	Aug. 20, 1940
2,263,503	Kennedy -----	Nov. 18, 1941
2,510,337	Franklin -----	June 6, 1950