ELECTRIC CALF WEANER

Fig. 1

Fig. 2

Fig. 5

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This invention relates to calf weaners and more particularly to a calf weaner of the type which shocks the calf in order to deter the calf from feeding.

The way that a weaner constructed in accordance with the invention functions is: The cow and the calf are both shocked when the calf begins to suck the cow, but this can only happen when pressure is applied from the top by means of the calf putting its head under the cow's body at the point of the udder and presses the top of the nose against the udder and under parts of the body of the cow. This is the only position that the calf ever normally gets into so as to close the circuit and cause the electrical shock.

This invention involves a weaner that has two points of contact, both of which must be connected before there can be any shock. The animal wearing the weaner wears one point of contact at all times. The other point of contact is the end of the switches when grounded after being closed. Only when the prongs are pressed down and provided with a ground path does the electric shock occur.

It is believed that one of the great improvements of this weaner over other electric weaners is the fact that this one does not shock the animal when coming in contact with other objects. Only when the animal gets in the position of sucking are the switches pressed down causing the electric shock. And after the switches are pressed down, they must be pressed against something to provide a ground path, which in this case is another animal, before there will be an electric shock.

There are two important new features in this invention: Only by pressure from the top of the weaner can the circuit become closed; and after being so pressed down, only when the end of switch is provided with a ground path which is provided by the body of the cow it is pressing against, does the electric shock take place.

Another very important function and use of the invention is that the weaner also serves the purpose of weaning cows which suck themselves. This is a serious problem with dairy herds and the weaner is placed upon the cow having this habit and the same electrical shock as in the case of the calf is had when she attempts to suck herself, her own body providing the ground path.

An object of the present invention is to provide a calf weaner which has structural improvements and operational advantages over prior electrically operative calf weaners.

Another object of the present invention is to provide a calf weaner which has a body adapted to fit over the bridge of the nose of the calf, this body being of electrical insulating material and having a printed circuit thereon, the circuit printing being achieved by any of the commonly accepted techniques, as embossing, embedding, etching, spraying, etc., and having provision to accommodate detachable batteries and an amplifier connected in circuit therewith, the amplifier being one of the known varieties, for example, a vibrator.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of a part of the calf showing the weaner constructed in accordance with the invention mounted operatively thereon;

Figure 2 is a top view of the weaner in Figure 1;

Figure 3 is a longitudinal sectional view of the weaner in Figure 2;

Figure 4 is a front view of the weaner in Figure 3;

Figure 5 is a schematic view showing the wiring which constitutes a part of the invention; and

Figure 6 is a fragmentary exploded perspective view of one manner of detachably securing the battery and/or amplifier on the body of the weaner.

In the accompanying drawings there is a calf 10 fragmentarily illustrated, this calf having a head 12 and other anatomical parts, included with which is the bridge of the nose. Weaner 14, made in accordance with the invention to exemplify the principles thereof, has a body 15 which is curved in longitudinal cross-section and is preferably in the form of a segment of a cone. In this way, the body will fit snugly on the bridge of the nose of the calf. Body 16 is made of an insulating material, for example, plastic, and has two slots 20 and 22 near the side edges thereof. A strap 24 has two parts 26 and 28, these parts passing respectively through slots 20 and 22. The parts of the strap are adjustable connected by means of a buckle 30 or an equivalent adjustable fastening device. The opposite ends of the straps are connected to chain 22 made of metal and adapted to extend around the head of the calf.

There is an electrical circuit connected with the body 16 and including various circuit components. As shown in Figures 3 and 4, there are three conductors 36, 38 and 40 which extend longitudinally over the body 16. Conductors 36, 38 and 40 are preferably applied to the body 16 by one of the standard electrical printed circuit techniques, for example, by being etched, patterned, embedded, embossed or others. Switches 42, 44 and 46 are operatively connected with the body and each includes a switch arm, there being resilient switch arms 48, 50 and 52 respectively. Rivets or like fasteners 54, 55 and 58 are used to attach the inner edge of each of the switch arms to the body 16 and to establish electrical continuity with the conductor 36. Each switch arm has a loop at its outer end, for example see Figure 3 wherein there are loops 60, 61 and 62 on the group of three switch arms. These loops have angled ends on which there are contacts 63, 64 and 65 respectively, these being removable parts of the three switches 44, 44 and 46. The loops on the switch arms are adapted to come to bear against the cow when the calf attempts to feed, and the force closes one or more of the switches to establish a closed circuit and cause the calf to be shocked.

The conductor 40 has three stationary contacts 67, 63 and 69 connected therewith, these stationary contacts being in the form of rivets or like being connected for electrical conduction to the conductor 40. They are in the path of normal movement of the switch arms 48, 50 and 52, and each of the switch arms is coated or otherwise covered with plastic or some other insulator except one-half to three-fourths inch of the ends 49, 51 and 53 of their loops 60, 61 and 62, which contact other animals or in the case of a sucking cow herself to provide a contact point, so that the cow will not become shocked except at such times as the shock is desired in the proper functioning of the weaner.

The previously mentioned electrical circuit that includes
the three switches 42, 44 and 46 also includes batteries 70 and an amplifier 72, the amplifier being of standard description, for example, a vibrator, spark coil or others. Batteries 70 are supported in a battery case 74 that has a removable closure 75 at one end and that has a pair of plug prongs 76 and 77 protruding therefrom. These prongs are adapted to be separately and frictionally held in a pair of openings 73 and 79, the latter constituting a socket, while the prongs 76 and 77 function as a plug. The socket is connected to the conductors 48 and 38, conductor 40 being connected with the switches as described previously and the conductor 38 being operatively connected to the vibrator. The vibrator 72 is also mounted in a case 88, the latter having a plug connection with the body 16 in a manner similar to the plug connection between the battery case 74 and the body 16. Other types of detachable connection by means of electrical sockets and plugs or special connectors may be used in place of the prongs and sockets illustrated. Conductor 36 also connects to the vibrator 72, and there is a wire 82, preferably insulated, extending operatively from the vibrator 72 to the chain 32 and soldered or otherwise connected therewith.

In use of the weaner, it is applied onto the calf as described previously. After the buckle 30 is used to tighten and fasten the strap 24 in place, the weaner is capable of functioning inasmuch as the chain 32 connects the calf in circuit with the weaner. When one or more of the switches 42, 44 and 46 are closed, an electrical circuit is established which includes not only the vibrator, battery and wiring, but also the calf. Therefore, so long as one of the switches is closed, the calf will become shocked due to the repeated inductive electrical energy developed at the vibrator.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A calf weaner comprising a longitudinally curved body adapted to fit over the bridge of the nose of the calf, electrically conductive means adjustable connected with said body to fit at least in part around the head of the calf to hold the body on the calf, said body being made of electrically insulating material, a switch attached at one end of said body, a battery carried by said body, an amplifier carried by said body, an electrical circuit including said battery, amplifier, body holding means and controlled by said switch to shock the calf when said switch is closed, said circuit including conductors fixed on said body, said switch including a stationary contact carried by said body and located on the upper exterior surface thereof, a resilient switch arm carried at one end by said body, and a contact at the opposite end of said arm adapted to be moved into contact with said stationary contact by means of an insulation cover on an inner portion of said resilient switch arm and the outer end portion of said switch arm exposed to touch and shock the cow.

2. In a calf weaner which is adapted to fit on the head of a calf, an electrically insulating body which is longitudinally curved to fit over the bridge of the nose of the calf, means to fasten said body onto the head of the calf and including at least a part which is electrically conductive and which is arranged to contact said cow, a battery, a battery case carried by said body at one end thereof, an electrical conductor extending from said case, a switch operatively connected with said electrical conductor and arranged to be closed only when the calf is in a feeding position and to shock the cow when so closed, a second electrical conductor extending from said switch, an amplifier connected to the last mentioned conductor and disposed at the opposite end of said body, a third electrical conductor extending from said amplifier to said conductive part of said fastening means in order to energize said means in response to closing of said switch, said switch including a resilient switch arm connected at one end to said body, a movable contact carried by said resilient switch arm, a stationary contact carried by said body and adapted to be touched by said movable contact in response to movement of said resilient switch arm, and electrically insulating material on a part of said resilient switch arm.

3. The weaner of claim 2 wherein said resilient switch arm has a bare loop at one end which protrudes beyond and outwardly from the forward edge of said body so as to be located in advance of said body to thereby contact the cow when the calf is in the feeding position.

4. The calf weaner of claim 2, wherein the first mentioned and said second electrical conductors are embedded in the body to facilitate the cleaning of the body and to prevent the conductors from becoming broken.

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