July 22, 1969 D. T. BRUMFIELD 3,457,358

APPARATUS FOR CONNECTING ELECTRICAL FENCE CONDUCTORS TO METAL FENCE POSTS

Filed Sept. 1, 1967

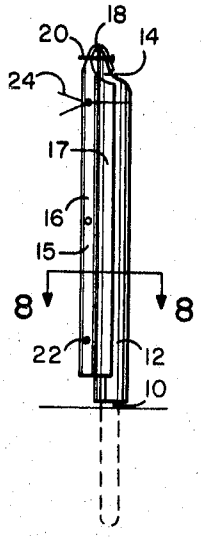


FIG. 1

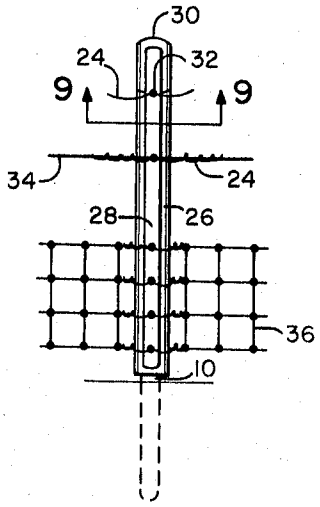


FIG. 2

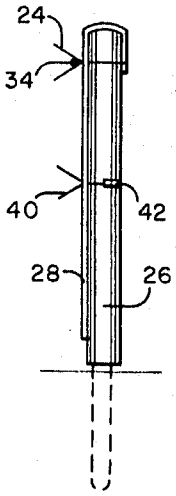


FIG. 3

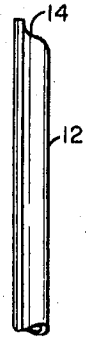


FIG. 10

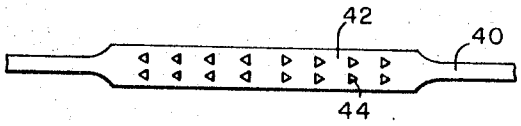


FIG. 4

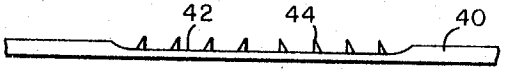


FIG. 5

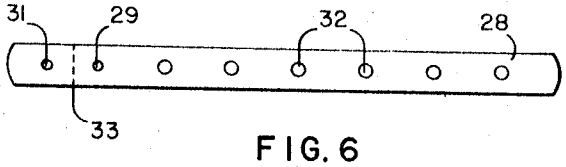


FIG. 6

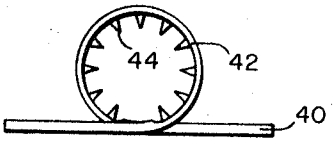


FIG. 7

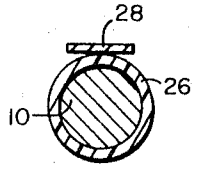


FIG. 9

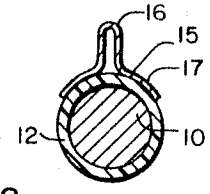


FIG. 8

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United States Patent Office 3,457,358
Patented July 22, 1969

3,457,358

APPARATUS FOR CONNECTING ELECTRICAL FENCE CONDUCTORS TO METAL FENCE POSTS

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Filed Sept. 1, 1967, Ser. No. 664,991
Int. Cl. H02g 7/20; H01b 17/16
U.S. Cl. 174—45 13 Claims

ABSTRACT OF THE DISCLOSURE

This invention is applicable to supporting electrical fence conductors on metal posts and generally comprises covering the upper portion of a metal fence post with an insulated sheath and securing a metal strap having holes displaced along the length thereof to the insulated sheath with wire members wrapped around the sheath and projecting through the holes for securing the electric fence conductors to the insulated sheath and thereby supporting the conductors in a given position on the post.

BACKGROUND OF THE INVENTION

As is well known in the art, electric fences comprise at least one electrical conductor that is connected to a power supply capable of providing an output in the order of approximately 2,000 volts. The conductor is supported around a given enclosure by a plurality of fence posts. These fence posts generally are made of steel. Thus it is necessary to insulate the electrical fence conductor wire from the metal fence post. This is usually accomplished by securing the electrical conductor wire directly to the post through an insulating connector. These electrical insulating connectors can take any of several forms known in the art, all of which are difficult to install, are relatively expensive, and are uniformly subject to electrical breakdown in use.

Electric fences have many advantages in fencing animals in a given enclosure because such fences are less likely to cause damage to the animals enclosed, are relatively inexpensive to install, are easily moved, and have many other advantages over other known fencing. However, a limitation in the use of electric fences is in maintaining the electrical circuit and preventing short circuits to ground. While such short circuits can occur from any of several causes, they usually occur because of failure or damage to the insulated connection between the conductor wire and the fence post. This can result from the fence post being knocked over, by animals brushing against the conductor wire at the post or by animals placing a strain on the connection between the post and the conductor wire that damages the insulating connector. Thus the failure to provide an adequate and fail safe insulated connection between the post and the conductor wire that will maintain the insulated connection over many and diverse types of conditions, has placed a serious limitation on the use of electric fences.

Therefore I have invented a new and novel apparatus for providing insulation between metal fence posts and the connected electrical fence conductor.

SUMMARY OF THE INVENTION

In the embodiment of my invention, I provide an insulated sheath that fits over the ends and sides of a substantial portion of the end of a metal post. The sheath may either be made to slip onto the metal post or the sheath may be heat shrunk to the post or applied such as by means of a plastic dip onto the outer surface of the metal post. Normally the metal post used is steel and has a general cylindrical shape. The plastic or insulated cylindrical sheath is closed at one end, and this closure may provide a tip portion for a use that will be hereinafter described.

A metal strap having holes displaced along the length thereof is secured to the side of the insulated sheath. In one embodiment, the metal sheath has one end folded over the previously mentioned tip portion and is secured thereto by a bolt, a fastener or the like. Wire members are then wrapped around the sheath and projected through the openings to secure the fence conductor to the post in the normal manner. By passing the wire members through openings in the strap, the conductor member is thus positioned vertically on the strap and is held in this position. Since there is a complete insulating sheath between the conducting member and the metal strap member and the fence post, it is very difficult, if not impossible, for an electrical short circuit to occur between the conductor member and the metal post. Even where the post is bent over or the connection between the electrical conductor and the fence post is damaged, a short circuit condition does not result.

My invention also employs a modified construction of the strap, and a particular connecting member having wire ends and a flat portion therebetween with barbs for securing the conductor wire to the insulating sheath in a manner that the barbs dig into the insulating sheath and aid in holding the wire connecting member at a given position on the sheath. Still further my invention makes it possible to secure and electrically connect fences comprising other than a single conductor wire and it is within the scope of my invention to support an electric fence that is made out of, for example, chicken wire or other woven wire. This of course presents many advantages in providing an electrical fence capable of jointly holding large and small animals.

It is therefore an object of my invention to provide a new and improved apparatus for supporting a conductor wire on a metal post.

It is another object of this invention to provide a new and improved apparatus for supporting an electric fence in a manner that the electric fence cannot become short circuited to the supporting metal post.

It is another object of my invention to provide a new and improved means for supporting the electrical conductor in an electric fence on a metal post in a quick and easy manner that is inexpensive and that may be readily disconnected and moved, and that does not result in short circuits of the conductor wire.

It is another object of this invention to provide a new and improved means for supporting woven wire electric fences on metal fence posts without creating a short circuit.

Other objects and advantages of the present invention will readily occur to those skilled in the art to which the invention pertains upon reference to accompanying detailed description in which like reference characters designate like parts throughout and in which:

FIGURE 1 is a side view of an embodiment of the sheathed electric fence post and strap.

FIGURE 2 is a front view of another embodiment of the sheathed electric fence post and strap.

FIGURE 3 is a side view of the embodiment illustrated in FIGURE 2.

FIGURE 4 is a top view of a particular connecting member.

FIGURE 5 is a side view of the connecting member illustrated in FIGURE 4.

FIGURE 6 is a plan view of an embodiment of the strap.

FIGURE 7 is a top view of the connecting member illustrated in FIGURES 4 and 5 as curved to fit around the sheath.

FIGURE 8 is a sectional view taken along line 8—8 of FIGURE 1.

FIGURE 9 is a sectional view taken along lines 9—9 of FIGURE 2.

FIGURE 10 is a side view of an embodiment of the sheath.

Referring now to the drawing, a steel, rod shaped fence post **10** is sharpened at one end for being driven into the ground. Positioned on the fence post **10** above the ground level is an insulating sheath **12** or **26** having a cylindrical configuration with the upper end **30** being closed. The sheath may be made of plastic or of other suitable insulating materials. The insulating sheath may comprise a separate element as illustrated in FIGURE 10 that is slidably positioned on the fence post **10**, or the sheath may be secured to the fence post in the form of a heat shrunk plastic on the outer surface of the post, or the plastic may be applied by dipping in the well know manner.

The strap, as for example strap **28** illustrated in FIGURE 6, has a plurality of apertures **32** along the length thereof and in use is secured to the side of the sheath **12** or **26**. Connecting wires **24** pass through the apertures **32** and are wound around the sheath **26** with the ends secured to the electric fence conductor **34** holding the metal strap **28** in position on the sheath **26** and holding the electric fence conductor **34** in the given spaced position relative to the strap, the sheath, the post **10** and the ground. Since it is rather difficult to hold the strap **28** in a given position on the side of the sheath **26**, it is advantageous and often necessary to fold the upper end of the strap **28** over the upper end of the sheath **26** as illustrated in FIGURE 3. The connecting wire **24** is then threaded through apertures **32** that are aligned on each side of the sheath **26** and thus the strap is held in position on the sheath **26** with the ends of the connecting wire **24** secured to the conductor member **34**.

In closing the end of sheath **12**, it is often advantageous to form a tip portion **14** that projects from the end thereof. The strap member **28** has a pair of apertures **29** and **31** that align when the end of the strap is folded along line **33** over the tip portion **14**, and is secured to sheath **12** by a bolt fastener or the like **20** inserted through apertures **29** and **31** and through the tip portion **14**. It should be recognized that this connection of the strap **28** onto the sheath **12** may be accomplished at the time of installing the sheath on the post **10** or at a time prior to installing the sheath **12** on the metal post **10**. Thus connection of the strap **28** to sheath **12** may be accomplished at a location remote from the place of driving the post **10** into the ground for installation of the electrical fence.

In another embodiment of my invention, the strap member as illustrated in FIGURES 1 and 8 may comprise a longitudinal metal strap **15** having side members **17** that are curved to fit the outer surface of the sheath **12**. A ridge portion **16** extending along the length of the strap has holes **22** along the length thereof for receiving the connecting wires **24**. The upper end of the strap has a curved over portion **18** with openings that coact with a hole through the tip portion **14** for receiving a bolt, screw, or the like **20**, for connecting and securing the strap to the sheath **12** in the manner previously described.

My invention also employs a unique connecting member **42** that has a flat portion with wire end members **40** at each end. Barb members **44** are formed on the surface of the flat portion **42** by punching or the like in the manner well known in the art for punching sharp end portions of the flat metal **42** outwardly to form the barbs **44**. The wire portions **40** are projected through the apertures **22** or **32** in the strap members, as for example strap member **28** as illustrated in FIGURE 3. When the wire members **40** are wrapped with sufficient tightness to cinch the member **42** around and against the insulating sheath **26**, then the barbs **44** are driven into the insulating sheath further securing the entire structure at a given position on the sheath **26**.

Still further, it is also possible to use the strap **42** to merely secure the electrical conductor **34** onto the sheath **26** without using the strap **28**. This is accomplished by sufficiently cinching the strap member **42** against the surface of the sheath **26** to cause the barbs **44** to sufficiently set into the sheath **26** that the strap member is held at a given position on the sheath **26**. Thus when the end wires **40** are connected to the conductor member **34**, the conductor member **34** is correctly positioned and permanently held at this position along the sheath **26**.

As illustrated in FIGURE 2, my invention makes it possible to support not only a single conductor wire or a plurality of strands of conductor wires **34**, but also to support woven wire, such as chicken wire **36** or the like, as electrical conductors in an electric fence. The woven wire members **36** are connected through connecting wires **24** to the strap members **16** or **28** thus maintaining an electrical connection through the woven wire members along their length and width.

Having described my invention, I now claim:

1. Apparatus for connecting electric fence conductors by wire members to metal fence posts comprising,
a metal fence post and wire members,
an insulating sheath covers the sides and the end of a substantial portion of said metal fence post,
a metal strap is secured to said insulating sheath and said fence post along their length,
and said metal strap has holes spaced along the length thereof that receive said wire members that secure said electric fence conductors to said posts and hold said wire members in given positions on the posts.

2. The apparatus defined in claim **1** in which,
said insulating sheath has a cylindrical shape with one end closed and a thin wall.

3. The apparatus defined in claim **2** in which,
the strap has curved sides for fitting against the outer surface of said sheath,
said strap has a longitudinal ridge projecting outwardly,
and said holes pass through the sides of said ridge.

4. The apparatus defined in claim **2** in which,
said insulating sheath is made of plastic.

5. The apparatus defined in claim **2** in which,
said sheath has a tip portion projecting beyond the closed end, and means securing one end of said strap to said tip portion.

6. The apparatus defined in claim **1** in which,
said strap is secured at a given position on the assembled sheath and post by the wire members being twisted in a cinch around said sheath.

7. The apparatus defined in claim **1** in which,
said metal strap extends over the closed end of said sheath with portions extending on opposite sides thereof,
and said holes in said strap on opposite sides are in substantial alignment for receiving the wire members.

8. The apparatus defined in claim **1** in which,
said strap is flat and has a width less than the diameter of said sheath.

9. The apparatus defined in claim **1** in which:
said sheath is fixed on the post.

10. The apparatus defined in claim **1** in which,
each of said wire members has a flat portion and a central portion with barbs projecting outwardly therefrom engaging the outer surface of said sheath.

11. The apparatus defined in claim **1** in which,
said strap electrically interconnects the electric fence conductors connected to the sheathed fence posts.

12. The apparatus defined in claim **1** in which,
said sheath is selectively removable from the posts.

13. The apparatus defined in claim **1** in which,
said wire members comprise a metal strap having a flat portion with integral wire portions secured to opposite ends,

said flat portions having outwardly projecting barbs,
said wire portions being capable of extending through the spaced holes and securing said conductors to the sheathed posts,
and said wire portions upon being tightened around the sheath driving said barbs into said sheath.

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LARAMIE E. ASKIN, Primary Examiner

U.S. Cl. X.R.

24—30.5; 174—158, 173; 256—10, 57