United States Patent [19]

Klebold et al.

[11] **3,885,733**

[45] **May 27, 1975**

[54] **NEW ELECTRIC PROD**

[76] Inventors: **Franklin R. Klebold,** P.O. Box 7650; **Robert L. Bruce,** 1604 Eagle Drive, both of Fort Worth, Tex. 76111

[22] Filed: **Mar. 27, 1973**

[21] Appl. No.: **345,462**

[52] **U.S. Cl.** ..... **231/2 E;** 273/84

[51] **Int. Cl.** **B68b 11/00**

[58] **Field of Search** ..... 231/2 E; 273/84; 46/232

[56] **References Cited**

UNITED STATES PATENTS

2,208,852	7/1940	Mongan	231/2 E
2,253,315	8/1941	Andrus	231/2 E
2,561,122	7/1951	Juergens	231/2 E
2,733,003	1/1956	Abildgaard et al.	231/2 E
3,011,287	12/1961	Goldfarb	46/232 X
3,362,711	1/1968	Larsen et al.	273/84
3,575,340	4/1971	Klebold	231/2 E

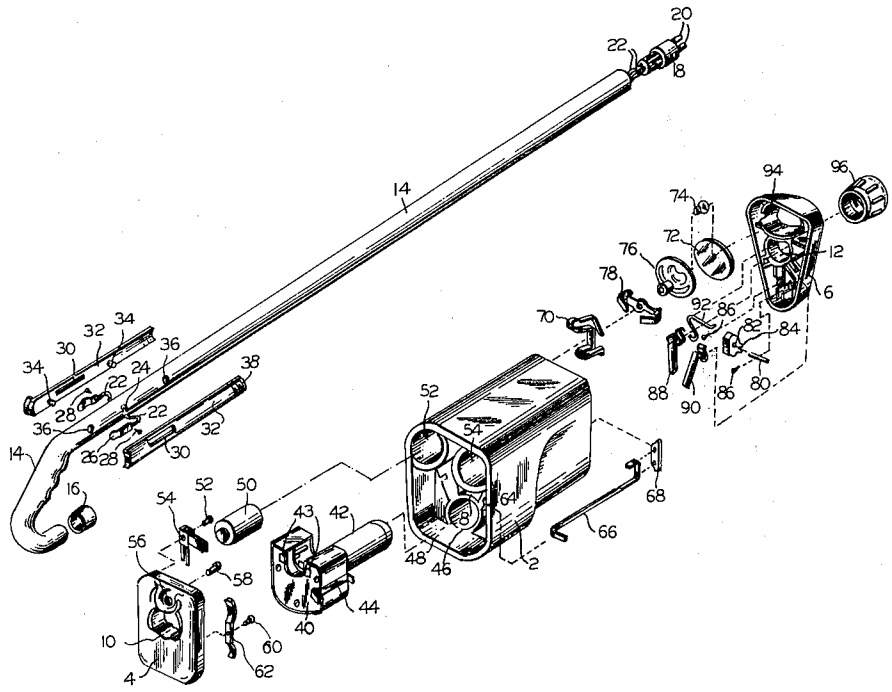
Primary Examiner—Hugh R. Chamblee

Attorney, Agent, or Firm—Charles F. Steininger

[57] **ABSTRACT**

An electrical prod for controlling unruly animals, individuals and mobs, including, a non-conductive cane-shaped body member having a pair of spaced prods mounted on the end opposite the handpiece of the cane and a pair of electrical leads connected to the prods, leading up separate channels in the staff of the cane and terminating at a pair of electrical contacts mounted on the exterior of the cane adjacent the handpiece; and four "D"-type batteries, a shocker circuit connected to the batteries, an electro-mechanical buzzer connected to the batteries, a light connected to the batteries, a two-position switch connected to the shocker circuit and the buzzer in a manner such that the buzzer may be actuated alone or the shocker circuit and the buzzer may be simultaneously actuated and a switch connected to the light, all mounted in an injection-molded, plastic housing slidably mounted on the shaft of the cane; the shocker circuit having contacts which cooperate with the contacts on the staff of the cane and the housing being made up of a main casing and end closures and being held in position on the cane by a hand-operable nut cooperating with threads on detachable flange plates on either side of the cane.

16 Claims, 6 Drawing Figures



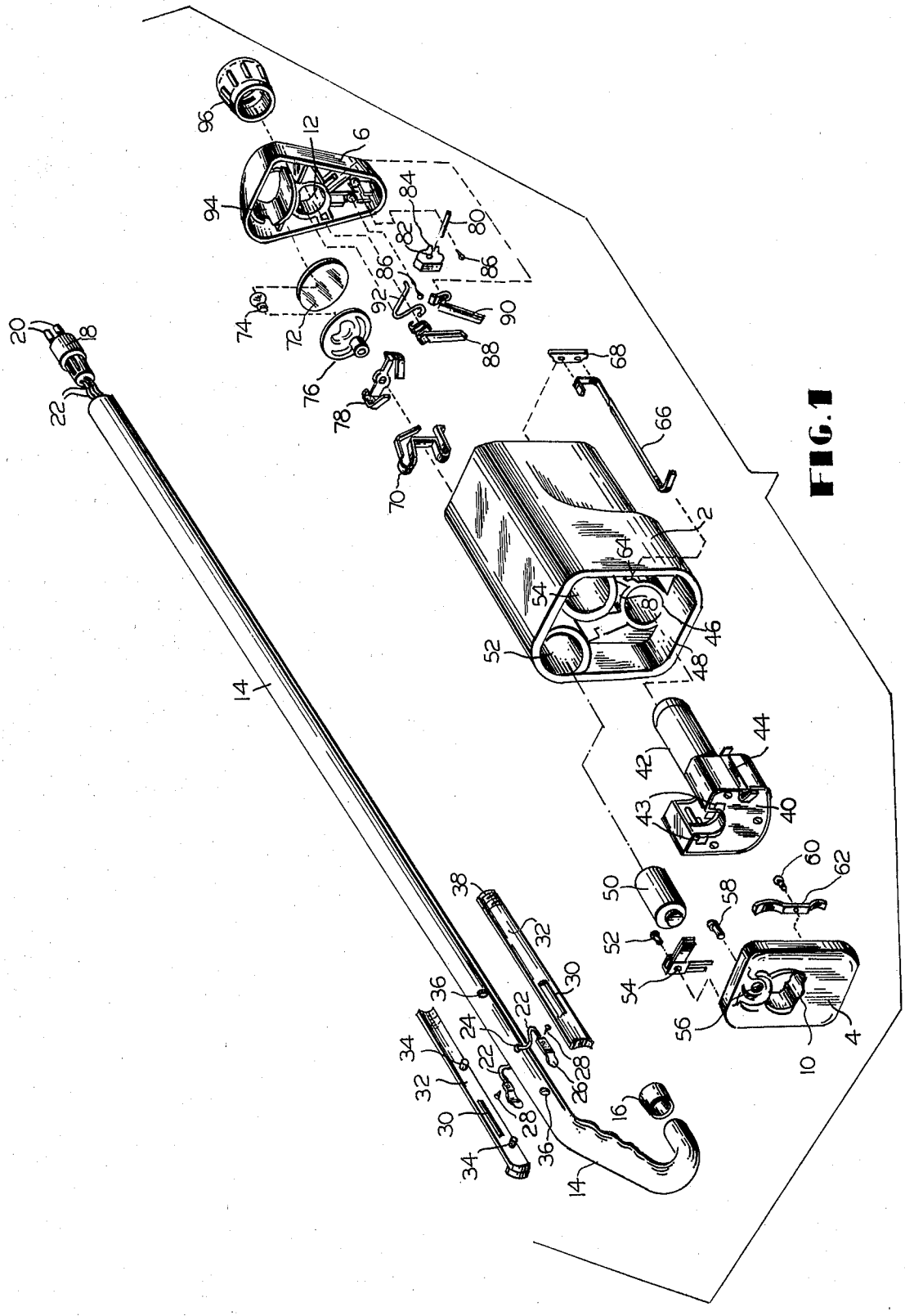


FIG. 1

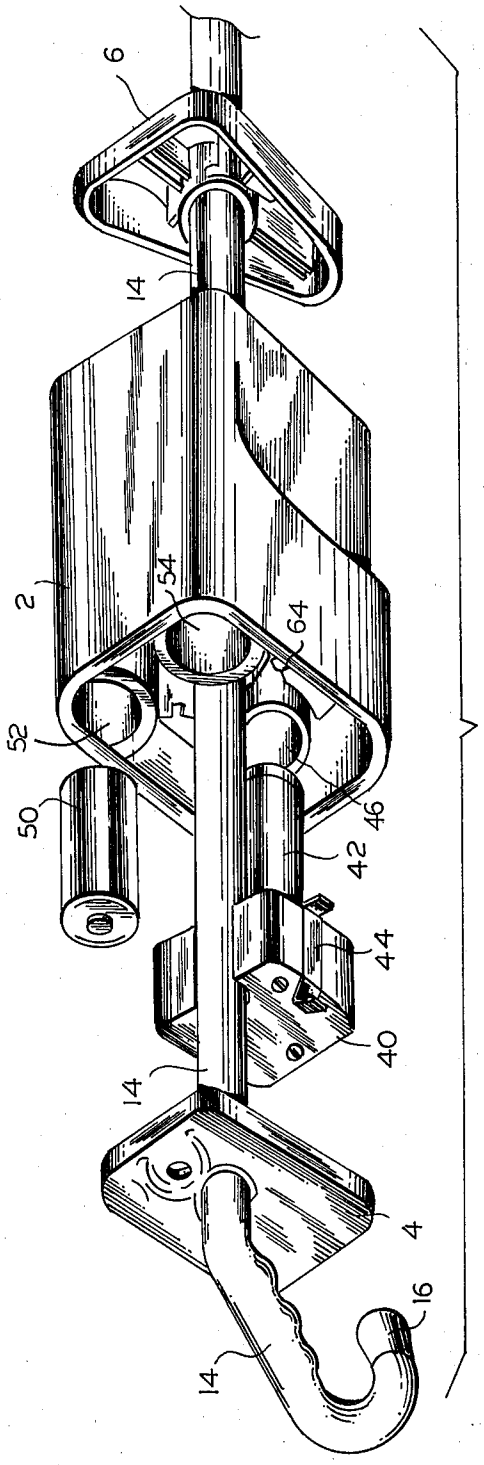


FIG. 3

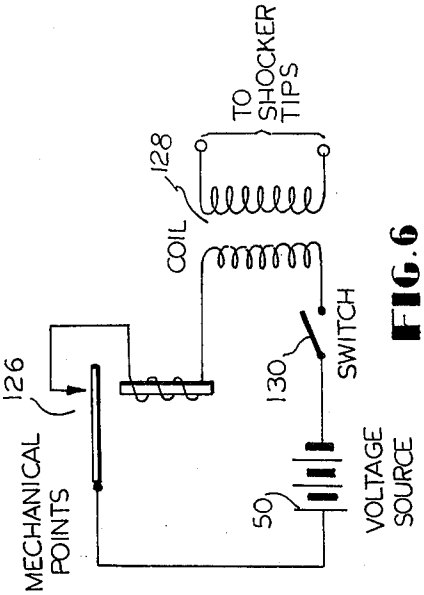


FIG. 6

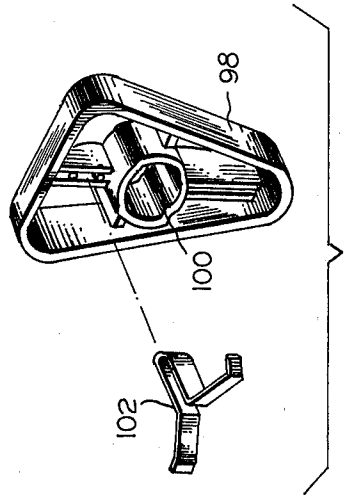


FIG. 2

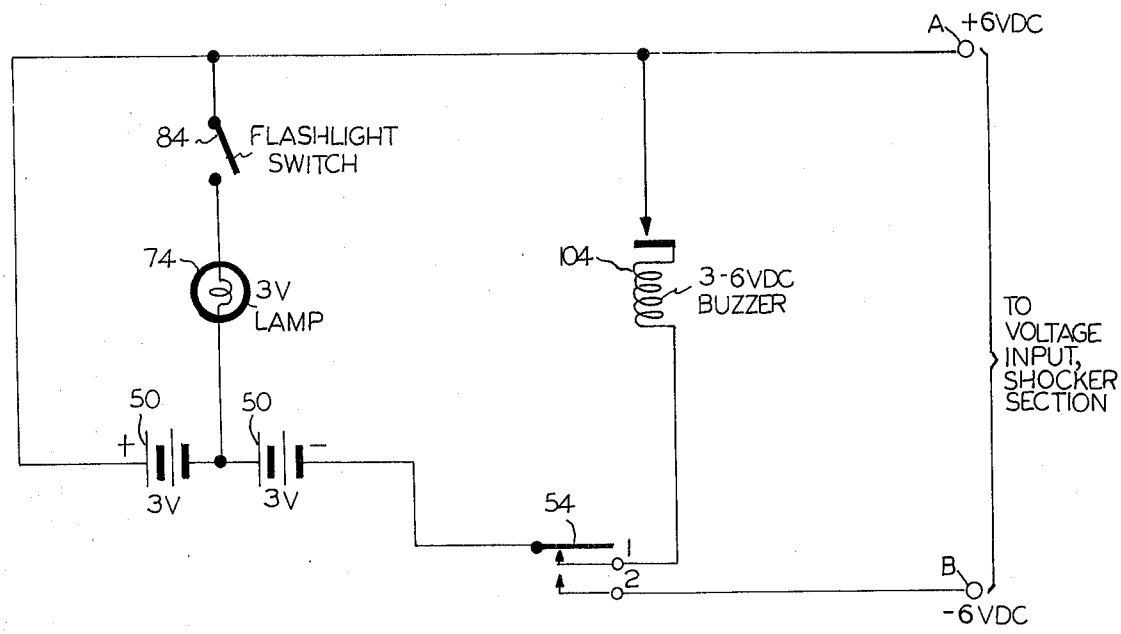

A
+6VDC
84
FLASHLIGHT SWITCH
74
3V LAMP
104
3-6VDC BUZZER
TO VOLTAGE INPUT, SHOCKER SECTION
50
50
+
3V
3V
54
1
2
B
-6VDC

FIG.4

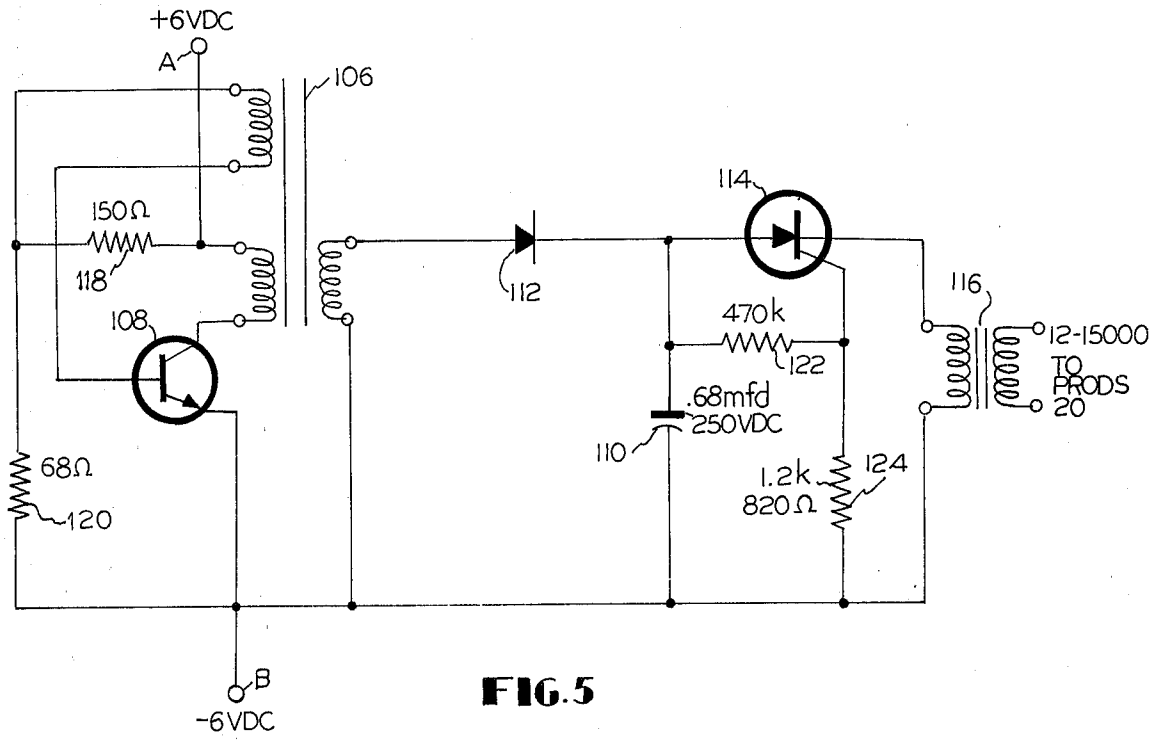

+6VDC
A
106
150Ω
118
108
68Ω
120
112
114
470k
122
.68mfd
250VDC
110
1.2k
820Ω
124
116
12-15000
TO PRODS
20
B
-6VDC

FIG.5

NEW ELECTRIC PROD

BACKGROUND OF THE INVENTION

The present invention relates to an electrical prod. More particularly, the present invention relates to an electrical prod for controlling unruly animals, individuals or mobs without debilitating effects.

Heretofore, a large number of electrical prods have been designed. These devices comprise primarily a battery of some type, an induction coil and a single or a pair of contact elements designed to produce an electrical shock when the circuit is actuated and is completed by a spark bridging the contacts. However, all of these devices have one or more major drawbacks which prevent their use to any great extent.

One drawback of the prior art devices has been that they are inconvenient to handle because of their bulk and manner of construction, and they are delicate because of the materials used and the manner of assembly. In many cases, the battery and coil are placed in a box which is carried by a strap passing around the user's shoulder and the wires to the contact elements then pass to a hand-held probe. While this provides a hand-held probe which is light, small in diameter and therefore convenient to handle, it is almost impossible to use such a device under the conditions and in the environment in which these devices are designed to be used. In another form of electrical prod, the batteries, coil, electrical wiring, etc. are all placed in an elongated pole or prod. In order to accomplish this, the pole or prod must be of a substantial diameter and, in all instances, the diameter is the same along the entire length of the pole. Further, in order to maintain the diameter within reasonable limits, the components of the electrical system are placed end to end in the interior of the pole. This still provides a unit which is too large in diameter to be conveniently handled and, in addition, the unit is unbalanced and difficult to actually use. Most of the prior art devices have been constructed with metal poles which are readily damaged when treated roughly or when subjected to day-to-day use under varying weather conditions. In addition to the ease of damaging the metal construction, the wiring and mounting of the components has been such that rough handling or extensive use can easily short the circuit or result in a broken circuit connection. A more serious disadvantage of all prior art devices is that the unit does not provide a deterrent effect without actually actuating the shocker circuit itself and coming into contact with the prods.

Most of the disadvantages of the above-mentioned prior art devices have been eliminated by the device described and claimed in the U.S. Pat. No. 3,575,340, issued Apr. 20, 1971. This device has numerous advantages over the art in that it is a well-balanced device which is of rugged and almost indestructable construction. However, extensive use of this unit has shown that it still has certain disadvantages. First of all, the weight and bulk of the patented device should be still further reduced. Further, if a problem develops or if the battery needs to be replaced, the device cannot be taken apart and put back together without the use of tools. Further, it is also difficult to insert or remove component parts of the apparatus. Finally, there is no means for conditioning an animal or the like to respond to any

impetus other than actual contact with the sparking probes.

It is therefore an object of the present invention to provide an improved electrical prod for moving or controlling unruly animals, individuals or mobs. Still another object of the present invention is to provide an improved electrical prod which is convenient to handle and light in construction. Another and further object of the present invention is to provide an improved electrical prod incorporating an electronic circuit for the generation of high voltage static electricity. Yet another object of the present invention is to provide an improved electrical prod which can be readily taken apart and put back together without the use of tools. Another and further object of the present invention is to provide an improved electrical prod in which all component parts can be easily inserted or removed. A further object of the present invention is to provide an improved electrical prod which can be utilized to condition an animal or the like to the presence of the prod without actually activating the shocking circuit. A still further object of the present invention is to provide an improved electrical prod having an acoustical signal circuit separate from an electronic shocker circuit. A further object of the present invention is to provide an improved electrical prod having an acoustical signal circuit which can be actuated alone and an electronic shocker circuit which can be actuated simultaneously with the acoustical signal circuit.

These and other objects and advantages of the present invention will be apparent from the following description.

SUMMARY OF THE INVENTION

Briefly, in accordance with the present invention, an electrical prod is provided, comprising; an elongated body member of non-conducting material having a hand piece formed on one end thereof, a pair of spaced contact elements mounted on the opposite end thereof and electrical line means connected to the contact elements and leading upwardly through the body member to a position adjacent the hand piece, shocker circuit means mounted on the body member adjacent the hand piece of the body member and electrically connected to the leads, a source of power, a second electrical circuit means operatively connecting the source of power to an acoustical signal means and switch means to separately actuate the acoustical signal means and alternately to simultaneously actuate the acoustical signal means and the shocker circuit means. The source of power, the shocker circuit means, the acoustical signal means and the second circuit means are mounted in a single housing, which housing is slidably mounted on the body member, and a hand-operable nut means is threadedly mounted on the body member to hold the housing in a fixed position on the body member. A separately actuatable flashlight can also be mounted in the housing.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 of the drawings is an exploded, perspective view of the electrical prod of the present invention;

FIG. 2 shows an exploded, perspective view of an alternate end plate assembly for the prod of FIG. 1;

FIG. 3 is an exploded, perspective view of a portion of the prod of FIG. 1, showing the manner of assembling the major parts;

FIG. 4 is an electrical schematic diagram of the acoustical signal and flashlight portion of the prod of FIG. 1;

FIG. 5 is an electrical schematic diagram of the shocker portion of the prod of FIG. 1; and

FIG. 6 is an electrical schematic diagram of an alternate shocker circuit means.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to FIGS. 1, 2 and 3 of the drawings, the main case includes housing 2 designed to house all component parts in such a manner as to afford easy insertion or removal. One end of housing 2 is closed by back plate 4 and the opposite end is closed by front plate 6. Apertures 8, 10 and 12 are formed through main case 2, back plate 4 and front plate 6, respectively. Cane or staff 14 has at the handle end thereof cane handle tip 16 and on the opposite end thereof shocker tip 18 with metal prods 20 protruding therefrom. Prod elements 20 are connected to electrical leads 22 which pass through the center of cane 14 and pass to the outside thereof through apertures 24. Connected to the opposite ends of electrical leads 22 are cane clips 26 which are fastened to the sides of cane 14 by means of screws 28. Cane clips 26 pass through apertures 30 in flange plates 32. Flange plates 32 are provided with pins 34 which pass into aligning apertures 36 in the sides of cane 14. One end of flange plates 32 is provided with threads 38. The purpose of threads 38 will be described hereinafter. When the cane unit is assembled, shocker tip 18 is pressure fit into the end of cane 14, clips 26 are fastened to the sides of cane 14 and mounting flange plates 32 on the sides of cane 14, the cane assembly is then passed through apertures 10, 8 and 12, respectively of back plate 4, main case 2 and front plate 6. The main case is formed in such a manner as to house an electronic motor package 40 having coil 42 protruding therefrom, high voltage pick-off tabs 43 adjacent the center and a motor strap 44 on the side thereof. The coil 42 is affixed to and extends forward from motor 40 and is adapted to pass into aperture 46 in housing 2, with the motor portion 40 thus within the enlarged portion 48 of housing 2. The housing 2 also houses four "D" size dry cell batteries (standard flashlight-type) 50. All four batteries are not shown in order to simplify the drawing. However, the batteries are mounted in apertures 52 and 54 in housing 2. When the motor 40 is inserted in housing 2 and the main case 2–4–6 is, in turn, placed on the cane shaft 14, pickoff contacts 43 on the inside of motor 40 transfer high voltage static electricity through cane clips 26, through leads 22 and thence to prods 20. As is obvious, the motor package 40–42 and the batteries 50 simply slip into the main case 2–4–6. Attached to the back plate 4 by means of screw 52 is two-position switch 54. Passing through aperture 56 of back plate 4 is switch button 58 of switch 54. The purpose of the two-position switch is to alternately actuate an electro-mechanical buzzer circuit or the buzzer circuit and the electronic shocking circuit, both of which will be described hereinafter. In general, the electro-mechanical buzzer circuit can be activated separately from the electronic shocker circuit by the use of the two-step switch in order to condition an animal into moving without the use of the electronic shocker circuit. Since the shocker circuit requires more amperage for its operation, it demands greater energy from the batteries. Therefore, using only the isolated buzzer circuit which operates independently of the shocker circuit at a lower amperage rating will extend battery life. Used together, the shocker circuit and the buzzer circuit condition the animal to respond to the buzzer only. To actuate the buzzer section, two-step switch 54 is depressed to its first or nearest position and to activate both the buzzer section and the shocker circuit, the two-step switch is depressed to its second or furtherest position. Thus, reinforcement of the response to the buzzer only is quite simple. Also attached to the back plate 4 by means of screw 60 is battery strap 62. For reasons which will be apparent later, it will be seen that battery strap 62 contacts only the batteries mounted in aperture 54 of housing 2. Passing through aperture 64 of housing 2 is flashlight adapter strap 66. Adapter insert 68 is mounted on the end of adapter strap 66. Also mounted in the front end of main case 2 is ground strap 70. The flashlight itself comprises lens 72 and flashlight bulb 74, which pass through reflector 76, and is screwed into battery strap 78. Pin 80 is passed through aperture 82 in switch wheel 84. The switch wheel assembly is inserted into front plate 6 and is secured therein by screws 86 so that, by rotating switch wheel 84, its offset back forces switch contact 88 against switch contact 90 causing electrical current to flow through wire contact 92 to ground strap 70 and thence through the filament of flashlight bulb 74. From the filament, current passes to the base of the bulb 74, thence to battery strap 78, which is common to one side of the battery circuit (one half of the four flashlight batteries), and through these two batteries to battery strap 62, which contacts strap 44 and flashlight adapter strap 66 which, in turn, is in contact with switch contact 90, thus completing the flashlight circuit. The lens 72 is inserted into cavity 94 of front plate 6 and it is held therein by the front lip of reflector 76. With the cane assembly 14–26–32–18 assembled and the main case 2–4–6 and all of its components assembled, the main case is slipped on the shaft or cane 14. Thereafter, retaining nut 96, which is internally threaded, is slipped over the end of cane 14 and is threaded onto threads 38 of flange plates 32. Retaining nut 96 is then tightened to secure the entire case assembly onto the shaft.

FIG. 3 shows an alternative front plate 98 having an aperture 100 for cane 14 to pass through. Mounted in front plate 98 is battery spring 102.

FIG. 4 sets forth the electrical schematic diagram for the flashlight and buzzer section of the device. In accordance with FIG. 4, an electro-mechanical buzzer 104 is connected to two-position switch 54 in such a manner that buzzer 104 can be actuated alone by closing two-position switch 54 to position 1. However, by closing two-position switch 54 to its section position, both the buzzer circuit and the shocker circuit are energized simultaneously.

FIG. 5 of the drawings is an electrical schematic diagram of the shocker circuit. This circuit generates a high voltage pulse and delivers it to prods 20 at the end of cane 14. In accordance with FIG. 5, a DC to DC converter, consisting of transistor 108 and transformer 106, operating as a blocking oscillator, generates several hundred volts from the dry cell power source 50. This voltage is used to charge the capacitor 110 through diode 112. A voltage divider across the capacitor causes the solid state SCR 114 to conduct thus discharging capacitor 110 through the primary of trans-

former **116.** The surge of current in the primary of transformer **116** induces a high voltage in its secondary which is connected to the probe tips **20** of the cane **14.** Resistors **118** and **120** in the blocking oscillator bias the transistor **108** to insure quick starting of the oscillator when the power is first applied and after SCR **114** conducts. Resistors **122** and **124** form a voltage divider which determines the conduction point of the SCR. Resistor **124** by varying from 1.2K to 820 ohms sets the pulse rate.

As was previously pointed out, the acoustical signal means and the manner in which this signal means is incorporated in the electronic shocker device provides a substantial advantage over devices of the prior art. Specifically, after utilizing the device for a period of time by operating the signal means and the shocker means simultaneously, an animal or the like will become conditioned to hearing the signal at the same time the aggravating shock is felt. Thereafter, the animal will respond to the signal alone without the necessity of using the shocker as such. Therefore, the drain on the batteries can be significantly reduced. The acoustical signal means can take any one of a number of forms, such as, the electro-mechanical buzzer shown in the present application, an electronic sonic device or any other type of acoustical signal means which gives a unique signal which the animal will associate with the use of the electrical prod and will not associate with some common sound.

Also, as previously pointed out, the present device, by utilizing solid state components and standard flashlight-type batteries, can be reduced in size and bulk to less than one-half the weight of the prior model of U.S. Pat. No. 3,575,340, without limiting the usefulness and convenience of handling which are attributes of the prior model.

While variations of the main case design can be made, it is also obvious that all component parts except for the wiring and the contact points can be assembled in one convenient package and all of the component parts can be easily and readily inserted or removed from the package. By providing spring-type contacts **26** connected to the wires **22** in the staff of the cane, the component package can then be slid onto the cane staff and electrical contact can be made between the contacts **26** and contacts **43** on the inside of the motor **40** without the necessity of connecting any wires to the component package itself. Likewise, once the component package has been slidably mounted on the cane staff, it can be held in place simply by screwing on the hand-operated nut **96.** As a result, the apparatus of the present invention can be assembled from its separate parts in less than one minute.

In addition, the housing elements **2–4–6** or **–98** are injection molded to provide strict compatibility and interchangeability.

It is also possible, as shown in FIG. **6** of the drawings, to substitute an electro-mechanical spark coil for the solid state device previously described. Such a circuit would be made up of mechanical contacts **126** and coil **128.** A small electromechanical spark coil of this type can be readily fit into the cavity normally intended for the solid state device. The spark coil would be energized by closing switch **130** to connect the power source **50.**

It is also obvious that the device can be used with the flashlight attachment mounted in front plate **6** or with conventional front plate **98.** However, a flashlight is, of course, a convenient attachment which can be operated separately or together with the prod itself and is mounted in a position such that it is most convenient when utilizing the prod and, by utilizing power from only two of the batteries, the power drain will be no more than that of a conventional flashlight. The light unit provides the user a hands-off light source for locating animals in dark areas or at night. However, the light is not bright enough to affect the animal's night vision.

The use of standard "D" size batteries makes it possible to replace the batteries readily and the apparatus need not be completely disassembled to make such replacement.

While specific components and specific circuit arrangements have been described in detail herein, it will be obvious that certain modifications and variations of the present invention will occur to one skilled in the art. Accordingly, the present invention is to be limited only in accordance with the appended claims.

We claim:

1. An electrical prod for animals or individuals; comprising, an elongated body member of non-conducting material; a battery means; shocker circuit means operatively connected to said battery means and including a pair of spaced spark gap means; acoustical signal circuit means operatively connected to said battery means; and switch means operatively connected to said shocker circuit means and said acoustical signal circuit means and adapted to independently actuate one of said acoustical signal circuit means and a combination of said acoustical signal circuit means and said shocker circuit means; said battery means, said shocker circuit means, said acoustical signal circuit means and said switch means being mounted on said body member.

2. A prod in accordance with claim **1** wherein a light means is operatively connected to the battery means and is mounted on the body member.

3. A prod in accordance with claim **1** wherein the body member has a cane-type hand piece formed on one end of an elongated staff.

4. A prod in accordance with claim **1** wherein the battery means is a plurality of D-type batteries.

5. A prod in accordance with claim **4** in which four D-type batteries are included.

6. A prod in accordance with claim **1** wherein the shocker circuit means is a solid state electronic shocker circuit means.

7. A prod in accordance with claim **1** wherein the shocker circuit means includes a blocking oscillator means operatively connected to the battery means to generate a voltage of several hundred volts, capacitor means connected to the output of said oscillator means, voltage divider means operatively connected across said capacitor means, a solid state SCR means operatively connected to said capacitor means and adapted to discharge said capacitor means and step-up transformer means connected to the output of said SCR.

8. A prod in accordance with claim **7** wherein the oscillator means includes transistor means and step-up transformer means.

9. A prod in accordance with claim **7** wherein the oscillator means includes resistor means biasing the transistor means to insure quick starting of the oscillator means.

10. A prod in accordance with claim **7** wherein the voltage divider means includes resistor means.

11. A prod in accordance with claim 10 wherein the resistor means varies in resistance to set the pulse rate of the oscillator means.

12. A prod in accordance with claim 1 wherein the acoustical signal circuit means includes an electro-mechanical buzzer means.

13. A prod in accordance with claim 1 wherein the battery means, the shocker circuit means, the acoustical signal circuit means and the switch means are included in a single housing.

14. A prod in accordance with claim 1 wherein a light means is operatively connected to the battery means and is enclosed in the housing.

15. A prod in accordance with claim 13 wherein the housing is slidably mounted on the body means.

16. A prod in accordance with claim 15 wherein the housing is held in place on the body means by a hand operable nut cooperating with threads on said body means.

* * * * *