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(54) **Title**: METHOD OF WILDLIFE CONTROL BY MEANS OF CHILLI GAS DISPENSER

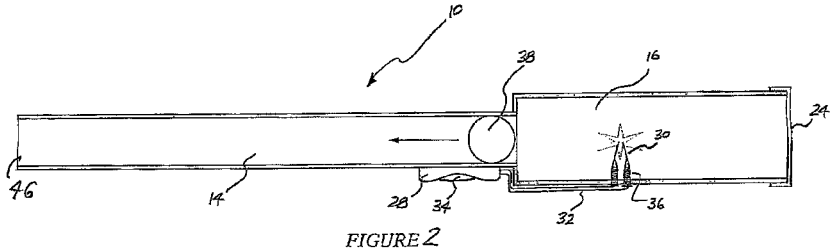

FIGURE 2

(57) **Abstract**: An animal deterrent device which includes a tube with a barrel and a chamber which is filled with a flammable gas which is electrically ignited to direct a capsaicin- containing capsule from the barrel towards the animal.

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Method of wildlife control by means of chilli gas dispenser

BACKGROUND OF THE INVENTION

[0001] This invention relates to a device for deterring wildlife, and particularly elephant, from a potential human-wildlife conflict situation.

[0002] In Africa, particularly, human settlements are frequently built in agriculturally marginal land which often coincides with land supporting large populations of wildlife. This gives rise to situations in which wildlife cause destruction to dwellings and crops. Such situations can also lead to human casualty and even death.

[0003] Fear of confrontation with wildlife confines the community to a localised area which restricts access to local resources such as water, fuel, land and grass and wood building materials, a particularly severe problem to these subsistence communities.

[0004] Elephant is a major contributor to such human-wildlife conflict.

[0005] Current techniques of managing these conflict situations have been characterised in that they require external intervention but often only after centralized authorization and consequently are expensive and only offer, at best, a delayed, largely ineffective and temporary solution (as the wildlife becomes habituated to the technique or method).

[0006] Farmers' groups, in affected areas, have been trained to employ non-lethal techniques of general vigilance coupled with the erection of simple physical barriers and use of specific deterrents, for example noise and fire.

[0007] The invention is provided to at least partially address the aforementioned problems.

SUMMARY OF THE INVENTION

[0008] The invention provides an animal deterrent device which includes an open-ended tube, a projectile in the tube which is positioned therein to define a barrel section and a chamber section, into which a flammable gas is placed after sealing a back end of the tube, and an initiator for igniting the gas thereby to increase the pressure in the chamber section to propel the projectile through the barrel section and out of the tube.

[0009] Hereinafter the term "conflict" refers to any situation in which an animal comes into contact or close proximity to a human or human settlement, cropland or possession so as to cause or potentially cause damage, injury or death.

[0010] The deterrent device is particularly useful for deterring an animal, such as an elephant, from conflict.

[0011] The tube may be made from a section of plastic piping e.g. PVC.

[0012] Preferably the tube includes a first member, comprising a pipe of a first inner diameter, and a second member, comprising a pipe of a second inner diameter which is larger than the first inner diameter, and wherein the second member is attached to the first member in axial alignment, and the first member and the second member constitute the barrel section and the chamber section respectively.

[0013] The first member and the second member may be threadedly inter-engaged.

[0014] The projectile may be spherical and have a diameter which is substantially the same as the first inner diameter.

[0015] The projectile may be hollow to contain a substance which has a deterrent effect on the animal. The substance may be, for example in the case of elephant, a substance containing capsaicin.

[0016] The projectile may be thin-walled to break on impact, thus releasing the substance.

[0017] The projectile may be a thin walled spherical body e.g. of a plastics material such as a ping pong (or table tennis) ball.

[0018] The deterrent device may include a detachable cap which sealingly engages with the back end. Preferably the cap is threadedly engaged with the back end.

[0019] The initiator may include a generator and a pair of electrodes between which the generator generates a spark. Preferably the generator is a high voltage generator such as a piezoelectric generator.

[0020] The generator may be exteriorly attached to the tube.

[0021] The electrodes may be spaced from the generator and may project into an interior of the chamber section.

[0022] In another aspect the invention provides a device for deterring an animal from conflict, which includes an tubular member comprising an open ended barrel section and a chamber section, into which a flammable gas is placed, a capsaicin-containing

projectile in the member, and an initiator which, on actuation, ignites the gas to propel the projectile through the barrel section and out of the member.

[0023] The animal may be an elephant.

[0024] The projectile preferably is positioned, after insertion into the member, between the barrel section and the chamber section.

[0025] The diameter of the chamber section may be larger than the diameter of the barrel section to provide sufficient gas containing volume.

[0026] The chamber section may have an open end to provide a means for inserting the projectile and the gas into the tubular member.

[0027] The open end may be sealable.

[0028] In a further respect, the invention provides a method of deterring an animal from conflict which includes the steps of providing a chemical deterrent-containing capsule and an open ended tubular device, placing the capsule within the device to define a volume between the capsule and a back-end of the device, sealing the back-end of the device, inserting a combustible gas into the volume and igniting the gas to propel the capsule from the device to within a vicinity of an animal.

[0029] The chemical deterrent may be a capsaicin-containing substance.

[0030] An advantage of the device of the invention is that it is easily assembled from materials and components which are relatively easily obtainable in a low technology environment such as that found in the context of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0031] The invention is further described by way of example with reference to the accompanying drawings in which :

Figure 1 is an isometric view of an animal deterrent device in accordance with the invention;

Figure 2 is a view, in longitudinal section, of the device of Figure 1;

Figure 3 illustrates, in a chronological series, the steps of loading a projectile into the device and firing the projectile from the device; and

Figure 4 illustrates the device in use as a deterrent.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0032] Figure 1 of the accompanying drawings illustrates an animal deterrent device 10, according to the invention, which includes an open-ended tube 12, made from a suitable plastics material such as PVC, which comprises a first, barrel, section 14 and a second, chamber, section 16.

[0033] The internal diameter of the chamber section is larger than the internal diameter of the barrel section.

[0034] To assemble the tube 12, the barrel section 14, which is threaded at an end 18, is engaged with a threaded aperture 20 of the second section 16.

[0035] A back-end 22 of the tube 12 is closed by a cap 24. The cap is either frictionally fitted or threadedly engaged to the end 22 to facilitate easy removal when access to the interior of the chamber section is required.

[0036] The device 10 includes an initiating mechanism 26, comprising a piezoelectric generator 28, a pair of electrodes 30 and wires 32 connecting each electrode to the generator. The generator 28 is attached, by any suitable means, to an exterior part of the barrel section 14 to conveniently position a trigger 34 for easy access by a user 42 of the device (illustrated in dotted outline in Figure 4).

[0037] Each electrode is carried by, or consists of, a respective self-tapping screw 36 which is screwed through a wall of the chamber section 16 to project into an interior of the chamber section 16, as illustrated in Figure 3.

[0038] The device 10 also includes a spherical projectile 38 in the nature of a table tennis ball. The projectile is thin-walled and made from a plastics or celluloidal material. The projectile is hollow to enclose a capsaicin-containing liquid which is injected into the projectile by any suitable means such as, for example, by using a syringe to inject the substance into the projectile. The hole that the needle of the syringe makes can then be filled with a wax material.

[0039] To use the device as a deterrent, the projectile must first be inserted into the tubular device. The projectile could be inserted through the back-end 22 after removing the cap 24 – see Figure 3A. Preferably the projectile is loaded through an open end 46 of the barrel section, and allowed to roll down this section to a junction of the sections 14 and 16. A small projection or ring, not shown, inside the tube 12 at this junction is used to ensure the projectile is accurately positioned inside the tube – see Figure 2.

[0040] As the projectile has a diameter which is substantially the same as the internal diameter of the barrel section, the projectile is lightly frictionally held in

position and in so doing, the loaded spherical projectile creates a seal between the barrel section 14 and the combustion chamber 16.

[0041] The chamber section 16 is then filled with a combustible gas such as a hydrocarbon propellant used in a canned aerosol product 40 (as illustrated in Figure 3B). The can is used to spray the gas into the chamber. Once done, the cap 24 is placed over the back-end 22 to seal the gas within the chamber (see Figure 3C).

[0042] The projectile 38 must then be propelled from the tubular device 12. This is initiated by the user 42 depressing the trigger 34 to generate, from the generator 28 via the wires 32, a potential difference across the electrodes 30 which results in a spark 44 (see Figure 3D). The spark ignites the combustible gas causing gaseous expansion and a concomitant increase in pressure within the chamber section 16 which is sufficient to propel the projectile 38 through the barrel section 14 and from the tube 12 via an open end 46.

[0043] On impact, the spherical projectile 38 will break, due to its thin wall structure, to release the capsaicin-containing liquid substance. The substance has a repellent effect on an animal such as, for example, an elephant which is highly sensitive to capsaicin.

[0044] The apparatus allows the substance, with its repellent effect, to be delivered to within a vicinity of the animal without the user risking death or injury by getting too close to the animal for delivery of the substance.

[0045] The device 10 comprises cheap and relatively easily available raw materials and components. The components are easily manufactured and assembled into the device.

[0046] The device provides an innocuous method to deter an animal without endangering the animal or causing discomfort or injury to the animal. The device is also easily operated and quickly loaded and reloaded.

CLAIMS

1. An animal deterrent device which includes an open-ended tube which receives a projectile which is positioned in the tube between a barrel section and a chamber section, into which a flammable gas is placed after sealing a back end of the tube, and an initiator for igniting the gas thereby to increase the pressure in the chamber section to propel the projectile through the barrel section and out of the tube.

2. A device according to claim 1 wherein the tube is made from a section of plastic piping.

3. A device according to claim 1 or 2 wherein the tube includes a first member, comprising a pipe of a first inner diameter, and a second member, comprising a pipe of a second inner diameter which is larger than the first inner diameter and wherein the second member is attached to the first member in axial alignment, and the first member and the second member constitute the barrel section and the chamber section respectively.

4. A device according to any one of claims 1 to 3 wherein the first member and the second member are threadedly inter-engaged.

5. A device according to any one of claims 1 to 4 wherein the projectile is spherical and has a diameter which is substantially the same as the first inner diameter.

6. A device according to any one of claims 1 to 5 wherein the projectile is hollow to contain a substance which has a deterrent effect on the animal.

7. A device according to claim 6 wherein the substance contains capsaicin.

8. A device according to any one of claims 1 to 7 wherein the projectile is a thin-walled spherical body.

9. A device according to any one of claims 1 to 8 which includes a detachable cap which sealingly engages with the back end.

10. A device according to claim 9 wherein the cap is threadedly engaged with the back end.

11. A device according to any one of claims 1 to 10 wherein the initiator includes a generator and a pair of electrodes between which the generator generates a spark.

12. A device according to claim 11 wherein the generator is a piezoelectric generator.

13. A device according to claim 11 or 12 wherein the electrodes project into an interior of the chamber section.

14. A device for deterring an animal from conflict, which includes an tubular member comprising an open-ended barrel section and a chamber section, into which a flammable gas is placed, a capsaicin-containing projectile which is placed in the member, and an initiator which, on actuation, ignites the gas to propel the projectile through the barrel section and out of the member.

15. A device according to claim 14 wherein the diameter of the chamber section is larger than the diameter of the barrel section.

16. A device according to claim 14 or 15 wherein the projectile is sealingly positioned between at least part of the barrel section and the chamber section.

17. A device according to any one of claims 14 to 16 wherein the chamber section has an open end to provide a means for inserting at least the gas into the tubular member.

18. A device as claimed in claim 17 wherein the open end is sealable.

19. A method of deterring an animal from conflict which includes the steps of providing a chemical deterrent-containing capsule and an open ended tubular device, placing the capsule within the device to define a volume between the capsule and a back end of the device, sealing a back-end of the device, inserting a combustible gas into the volume and igniting the gas to propel the capsule from the device to within a vicinity of an animal.

20. A method according to claim 19 wherein the chemical deterrent is a capsaicin-containing substance.

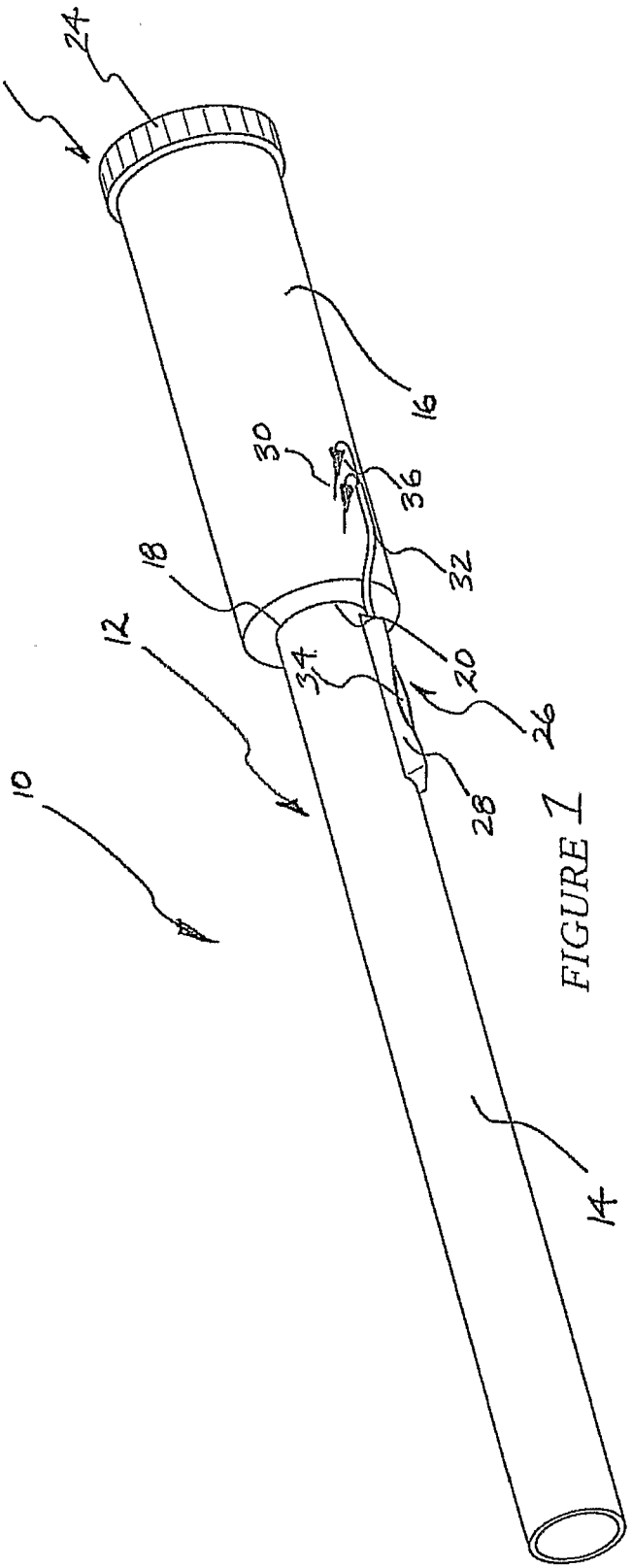

FIGURE 1

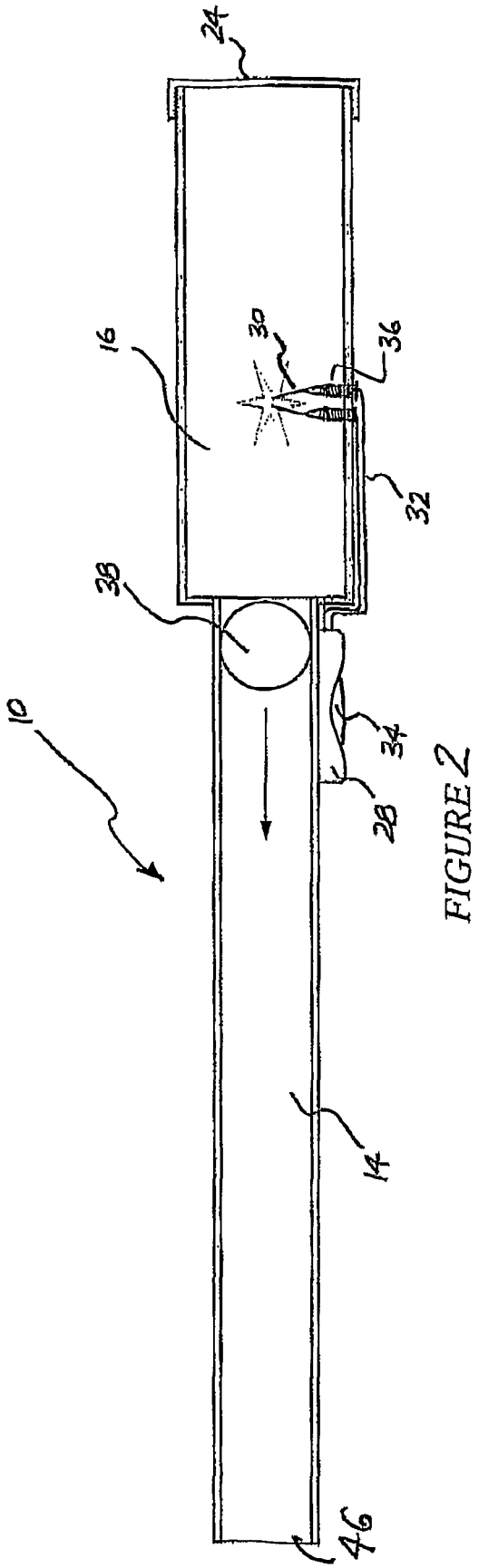

FIGURE 2

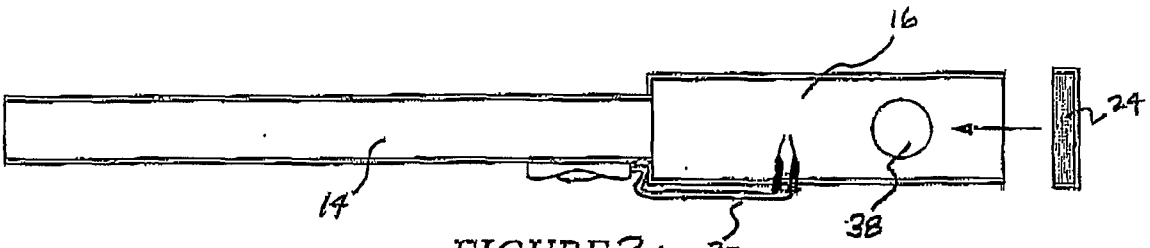

FIGURE 3A

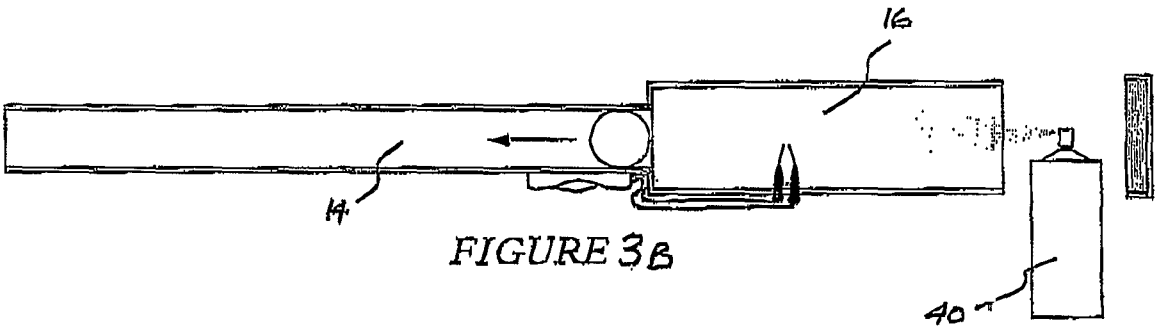

FIGURE 3B

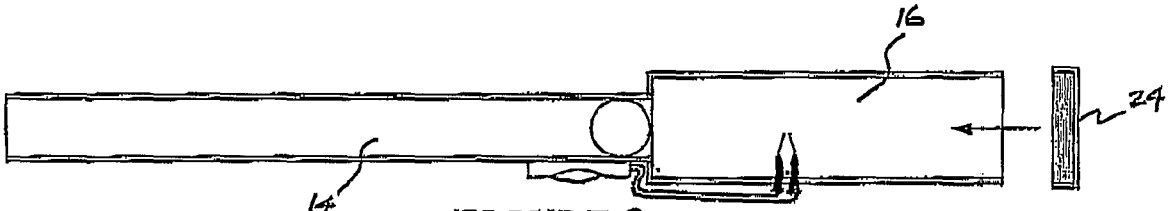

FIGURE 3C

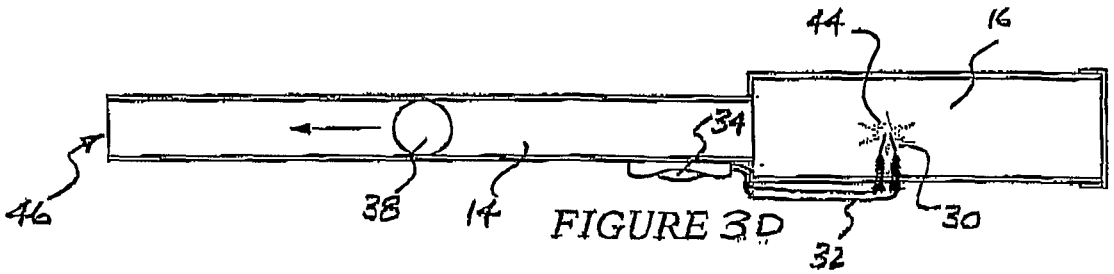

FIGURE 3D

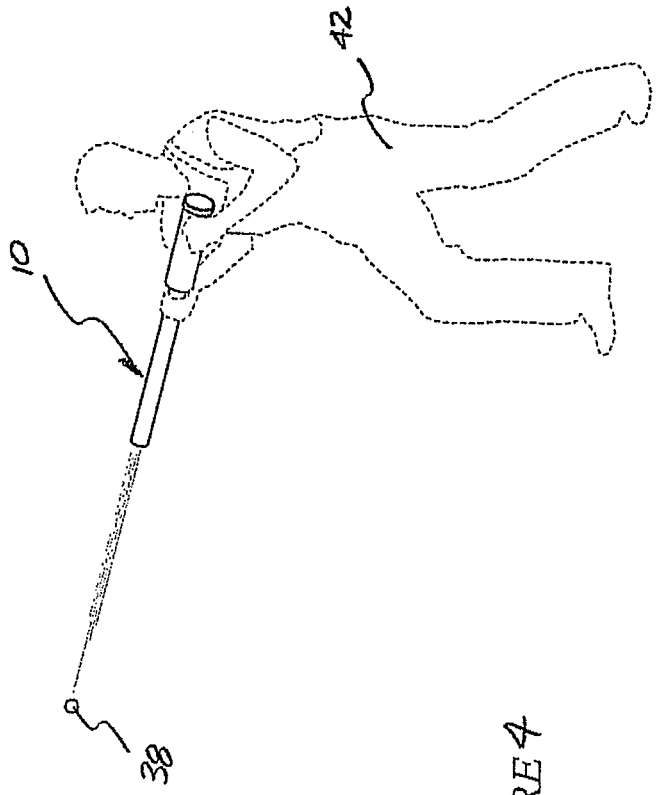

FIGURE 4