ABSTRACT

The system of the preferred embodiments includes a weapon, an input device coupled to the weapon and adapted to record information, a memory device coupled to the input device and adapted to store recorded information, and a security device coupled to the memory device and adapted to inhibit unauthorized tampering of the recorded information. The system has been specifically designed to record information during the use of a weapon. If used properly, the recorded information should increase the accountability of army personnel and police officers.
WEAPON AND INPUT DEVICE TO RECORD INFORMATION

TECHNICAL FIELD

[0001] This invention relates generally to the weapons field, and more specifically to a weapon with an input device, such as a camera or a microphone.

BACKGROUND

[0002] Stun guns are less-than-lethal weapons used by army personnel and police officers as protection against terrorist and criminal attacks. Stun guns work by applying a high-voltage, but low-current, electrical charge. Since the nervous system in the human body works by sending electrical charges through neural pathways, the electrical charge provided by a stun gun “confuses” the nervous system. This confusion can cause a recipient of an electrical charge from a stun gun to feel paralyzed for a brief instant, or can cause a spasm or convulsion in an area of their body. Because stun guns are considered less-than-lethal, they have become a weapon of choice by many law enforcement agencies throughout the world.

[0003] Stun guns could, however, be abused by law enforcement officials because of the potential to cause temporary paralysis without leaving substantial visible marks on the human body. Careful training largely eliminates this concern. Nevertheless, there is a need in the stun gun field, and in the broader weapon field, to create a system that allows a user to restrain a recipient during a terrorist or criminal attack and that also increases the accountability of the user.

BRIEF DESCRIPTION OF THE FIGURES

[0004] FIGS. 1 and 2 are representations of the first variation of the weapon and of the first variation of the memory device and the security device.

[0005] FIGS. 3 and 4 are representations of the second and third variations of the weapon, respectively.

[0006] FIG. 5 is a representation of the fourth variation of the weapon.

[0007] FIG. 6 is a representation of the gun cartridge used with the fourth variation of the weapon.

[0008] FIGS. 7 and 8 are representations of the third variation of the memory device and the security device.

[0009] FIGS. 9 and 10 are representations of the fourth and fifth variations of the memory device and the security device, respectively.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0010] The following description of the preferred embodiments of the invention is not intended to limit the invention to these preferred embodiments, but rather to enable any person skilled in the art to make and use this invention.

[0011] As shown in FIGS. 1 and 2, the system 10 of the preferred embodiments includes a weapon 12, an input device 14 to record information, a memory device 16 to store recorded information, and a security device 18 to inhibit unauthorized tampering of the recorded information. The system 10 has been specifically designed to record information while the weapon 12 is used. The recorded information should increase the accountability of army personnel and police officers. The system 10 may also be used by individuals to provide evidence of a terrorist, criminal, or personal attack.

[0012] The system 10 includes a power source 26, which may be any suitable device that supplies an electrical charge. The power source 26, like all batteries,
includes opposing charges, which are commonly referred to as a positive charge and a negative charge. Preferably, the power source 26 is also connected to the input device 14. More preferably, the power source 26 is connected to the electronic stun device 20 and to the input device 14 such that if the power source 26 has enough electrical charge to power the electronic stun device 20, then it must have enough electrical charge to power the input device 14. In this manner, the system 10 could not be used without the ability to record information. Alternatively, the input device 14 may be connected to the power source 26 in any suitable manner or may be connected to any other suitable power device.

In the first variation of the weapon 12, the electronic stun taser 30 also preferably includes a control unit 50 that incorporates a trigger mechanism 52, a deployment circuit 54, the activation circuit 28, and a transformation circuit 56. The trigger mechanism 52 functions to receive an input from the user of the electronic stun device 20. The trigger mechanism 52 is preferably an electromechanical device, but may alternatively be any suitable device that receives an input. Preferably, the trigger mechanism 52 automatically and simultaneously powers both the electronic stun device 20 and the input device 14. The input device 14 may alternatively be triggered by other devices, such as a safety lock or any other suitable device.

The deployment circuit 54 functions to ignite the propellant 44 after an input from the user has been received by the trigger mechanism 52. The activation circuit 28 functions to selectively connect one of the opposing charges to the first electrical member 22 and connect the other of the opposing charges to the second electrical member 24. The deployment circuit 54 and the activation circuit 28 are preferably conventional circuits, such as the circuits described in U.S. Pat. No. 6,575,073 (which is hereby incorporated in its entirety by this reference). The deployment circuit 54 and the activation circuit 28 may alternatively be any suitable circuits.

The transformation circuit 56 functions to transform the supplied electrical charge from the power source 26 into an appropriate electrical charge for the electronic stun device 20. An appropriate electrical charge preferably includes 50,000 volts at 4-6 milliamperes, but may alternatively include other suitable electrical parameters.

In the first variation of the weapon 12, the electronic stun taser 30 may include a sight, which functions to assist in the aiming of the electronic stun taser 30. Preferably the sight includes a conventional laser or a conventional blade, but may alternatively include other suitable devices to assist in the aiming of the electronic stun taser 30.

In the second variation of the weapon 12, as shown in FIG. 3, the weapon 12 is also generally an electronic stun device 20, but is more specifically an electronic stun shield 58. The electronic shield 58 preferably includes a protective shield 60 having a user surface 62 and a recipient surface 64. The protective shield 60 functions to provide protection against terrorist and criminal attacks and to house a first electrical member 22, a second electrical member 24, a power source 26, and an activation circuit 28. The protective shield 60 preferably includes a pair of handles 34, but may alternatively include other holding devices. The protective shield 60 is preferably made of a durable, lightweight material, such as LEXAN polycarbonate resin, but may alternatively be made of any suitable material.

In the second variation of the weapon 12, the first electrical member 22 is a first strip 66 mounted on the recipient surface 64, and the second electrical member 24 is a second strip 68, mounted to the recipient surface 64. The first strip 66 and the second strip 68 are preferably arranged in interlocking “E” patterns and are preferably made of metallic material, but may alternatively be arranged in any suitable manner and made of any suitable material.

In the second variation of the weapon 12, the power source 26 is preferably identical to the power source 26 of the first variation of the weapon 12. The power source 26 may, however, be sized or formed in any suitable manner to accommodate the different form factor of the electronic stun shield 58.

Like the first variation of the weapon 12, the second variation of the weapon 12 preferably includes a control unit 50. The control unit 50 of the second variation of the weapon 12, preferably includes a trigger mechanism 52, the activation circuit 28, and a transformation circuit 56. The control unit 50 does not, preferably, include the deployment circuit 54, since there is preferably nothing to deploy in the second variation of the weapon 12.

In the third variation of the weapon 12, as shown in FIG. 4, the weapon 12 is also generally an electronic stun device 20, but is more particularly an electronic stun gun 70. The electronic stun gun 70 preferably includes a housing 72, which functions to house a first electrical member 22, a second electrical member 24, a power source 26, and an activation circuit 28. The housing 72 preferably includes a handle 34, but may alternatively include other holding devices. The housing 72 is preferably made of a durable, lightweight plastic, but may alternatively be made of any suitable material.

In the third variation of the weapon 12, the first electrical member 22 is a first probe 74 extending from the housing 72, and the second electrical member 24 is a second probe 76 extending from the housing 72. The first probe 74 and the second probe 76 are preferably made of metallic material, but may alternatively be made of any suitable material.

In the third variation of the weapon 12, the power source 26 is preferably identical to the power source 26 of the first and second variations of the weapon 12. The power source 26 may, however, be sized or formed in any suitable manner to accommodate the different form factor of the electronic stun gun 70.

Like the second variation of the weapon 12, the third variation of the weapon 12 preferably includes a control unit 50 with a trigger mechanism 52, the activation circuit 28, and a transformation circuit 56.

In the fourth variation of the weapon 12, as shown in FIGS. 5 and 6, the weapon 12 is a firearm 78. The firearm 78 preferably includes a chamber 80, which functions to engage a gun cartridge 82. The gun cartridge 82 preferably includes a case 84, which substantially encloses a bullet 86, a propellant 88, and a primer 90. The case 84 is preferably made of a metallic material, but may alternatively be made of any suitable material. The bullet 86 functions to penetrate the recipient. The bullet 86 is preferably made of a metallic material, but may alternatively be made of any suitable material. The propellant 88 functions to propel the first dart.
38 and second dart 42 toward the recipient. The propellant 88 is preferably a smokeless powder, which includes nitrocellulose flakes, but may alternatively be any suitable propellant including compressed gas. The primer 90 functions, upon the activation of the firearm 78, to ignite the propellant 88. The primer 90 is preferably a small charge of an impact-sensitive chemical that may be located at the center of the case 84 head (centerfire ammunition) or at its rim (riflefire ammunition). The primer 90 may, however, be any suitable device or compound, including—in some cases—an electronic device.

[0029] As shown in FIGS. 1 and 2, the input device 14 of the preferred embodiments functions to record information during the use of the weapon 12, which should increase the accountability of army personnel and police officers. The input device 14 is preferably one of several variations. In a first variation, the input device 14 includes a microphone that functions to record audio information. The microphone is preferably a conventional microphone, but may be any suitable device able to record sound. In a second variation, the input device 14 includes a camera that functions to record video information. The camera is preferably a conventional camera, but may be any suitable device able to record images using visual and/or infrared light waves. In a third variation, the input device 14 includes a sensor adapted to record environmental information, such as temperature, humidity, time, and date, which can be used to analyze the effectiveness of the weapon 12. The sensor is preferably a conventional sensor, but may be any suitable device able to record environmental parameters or conditions. In alternative variations, the input device 14 may include any suitable combination or permutation of the above input devices. Although there are certain advantages to these particular variations, the input device 14 may take any suitable form.

[0030] The input device 14 of the preferred embodiments may also include a processor 92, which functions to code and/or compress the captured information. When using a camera and microphone, the processor 92 preferably codes and compresses the audio and video information using the MPEG-4 compression formats, but may alternatively use any suitable compression format. The processor 92 is preferably a conventional processor 92, but may alternatively be any suitable device able to code and/or compress the captured information.

[0031] The memory device 16 and the security device 18 of the preferred embodiments function to store recorded information and to inhibit unauthorized tampering of the recorded information, respectively. As used in this document, "inhibit" means "to prohibit or to discourage," "unauthorized" means "without the legal or ethical right," and "tampering" means "altering or transferring." Like the weapon 12, the memory device 16 and the security device 18 are preferably one of several variations. In the first and second variations, the memory device 16 is mounted to the weapon 12 in a manner to allow removal of the memory device 16 from the weapon 12. In the third, fourth, and fifth variations, the memory device 16 is mounted to the weapon 12 in a manner to inhibit removal of the memory device 16 from the weapon 12.

[0032] In the first variation of the memory device 16 and the security device 18, as shown in FIGS. 1 and 2, the memory device 16 is removably mounted to the weapon 12 and the security device 18 is adapted to require a physical key 110 before allowing access to the memory device 16. This variation is preferably accomplished with a flash device 94 as the memory device 16 and with a mechanical lock 96 on a hinged portion 98 of the weapon 12 as the security device 18. The variation may, however, be alternatively accomplished with other suitable devices and methods.

[0033] The second variation of the memory device 16 and the security device 18 is preferably similar to the first variation, except that the security device 18 is adapted to require an electronic authorization before allowing access to the recorded information. This variation is preferably accomplished with a software-encoded password lock on the flash device 94. The variation may, however, be alternatively accomplished with other suitable devices and methods.

[0034] In the third, fourth, and fifth variations of the memory device 16 and the security device 18, as shown in FIGS. 7-10, the memory device 16 is mounted to the weapon 12 in a manner to inhibit removal of the memory device 16 from the weapon 12. This variation is preferably accomplished by enclosing the weapon 12 around the memory device 16, but may alternatively be accomplished by any other suitable devices or methods. The memory device 16 of these variations is preferably a conventional memory chip 100, such as RAM, but may alternatively be any suitable device able to store information. These variations preferably include an output device 102 coupled to the memory device 16 and adapted to facilitate transfer of the recorded information from the memory device 16 to another device 104.

[0035] In the third variation of the memory device 16 and the security device 18, as shown in FIG. 7, the output device 102 includes a wireless transceiver 106, and the security device 18 is further adapted to require an electronic authorization before allowing access to the recorded information. The wireless transceiver 106 is preferably a Bluetooth short-range transceiver, but may alternatively be any suitable device that wirelessly communicates information. The wireless transceiver 106 is preferably a conventional security method, such as Extensible Authentication Protocol, but may alternatively be any suitable security method that requires authorization or authentication.

[0036] The fourth variation of the memory device 16 and the security device 18 is preferably similar to the third variation, except that the output device 102 includes a wired port 108, as shown in FIG. 8. The wired port 108 preferably includes a USB port, but may alternatively include any suitable device that communicates information from one device to another device 104.

[0037] The fifth variation of the memory device 16 and the security device 18 is preferably similar to the fourth variation, except that the security device 18 is adapted to require a physical key 110 before allowing access to the recorded information, as shown in FIG. 10. This variation is preferably accomplished with a magnetic read switch 112 embedded in the weapon 12 and a magnet 114 embedded in a cradle 116. When sufficiently aligned, the magnet 114 flips the magnetic read switch 112, which allows use of the output device 102. The cradle 116 is preferably designed to allow sufficient alignment when the weapon 12 is placed within the cradle 116. The variation, of course, may be alternatively accomplished with other suitable devices and methods.
The sixth variation of the memory device 16 and the security device 18 is preferably similar to the third variation. In this variation, however, the output device 102 includes a wireless transmitter 106 and the memory device 16 is preferably located in a remote location from the weapon 12. The memory device 16 may be located and secured, for example, in a police vehicle.

Although omitted for conciseness, the preferred embodiments include every combination and permutation of the various weapons, the various input devices, the various memory devices, and the various security devices.

As a person skilled in the art will recognize from the previous detailed description and from the figures and claims, modifications and changes can be made to the preferred embodiments of the invention without departing from the scope of this invention defined in the following claims.

We claim:

1. A system comprising:
   - an input device coupled to the weapon and adapted to record information;
   - a memory device coupled to the input device and adapted to store recorded information; and
   - a security device coupled to the memory device and adapted to inhibit unauthorized tampering of the recorded information.

2. The system of claim 1 wherein the weapon includes:
   - a first electrical member adapted to contact a recipient at a first location;
   - a second electrical member adapted to contact the recipient at a second location;
   - a power source having opposing charges; and
   - an activation circuit adapted to selectively connect one of the opposing charges to the first electrical member and connect the other of the opposing charges to the second electrical member.

3. The system of claim 2 wherein the weapon includes a body defining a chamber adapted to engage a first dart cartridge.

4. The system of claim 3 wherein the power source is connected to the input device.

5. The system of claim 3 further comprising a trigger mechanism that automatically powers the input device upon the imminent use of the weapon.

6. The system of claim 2 wherein the weapon includes a protective shield having a user surface and a recipient surface, wherein the first electrical member is a first strip coupled to the recipient surface, and wherein the second electrical member is a second strip coupled to the recipient surface.

7. The system of claim 2 wherein the weapon includes a housing, wherein the first electrical member is a first probe extending from the housing, and wherein the second electrical member is a second probe extending from the housing.

8. The system of claim 1 wherein the weapon includes a chamber adapted to engage a gun cartridge.

9. The system of claim 1 wherein the input device includes a camera adapted to record video information.

10. The system of claim 1 wherein the input device includes a microphone adapted to record audio information.

11. The system of claim 1 wherein the input device includes a camera adapted to record video information, a camera adapted to record video information, and a sensor adapted to record environmental information.

12. The system of claim 1 wherein the memory device is removable mounted to the weapon.

13. The system of claim 12 wherein the security device is further adapted to require a physical key before allowing access to the recorded information.

14. The system of claim 12 wherein the security device is further adapted to require an electronic authorization before allowing access to the recorded information.

15. The system of claim 1 wherein the memory device is mounted to the weapon in a manner to inhibit removal of the memory device from the weapon.

16. The system of claim 15 further comprising an output device coupled to the memory device and adapted to facilitate transfer of the recorded information from the memory device to another device.

17. The system of claim 16 wherein the output device includes a wireless transceiver, and wherein the security device is further adapted to require an electronic authorization before allowing access to the recorded information.

18. The system of claim 16 wherein the output device includes a wired port.

19. The system of claim 18 wherein the security device is further adapted to require an an electronic authorization before allowing access to the recorded information.

20. The system of claim 18 wherein the security device is further adapted to require a physical key before allowing access to the recorded information.

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