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(54) HUNTING SAFETY DEVICE AND OPERATING METHOD THEREOF

JAGDSICHERHEITSVORRICHTUNG UND BETRIEBSVERFAHREN DAFÜR

ÉQUIPEMENT DE SÉCURITÉ POUR LA CHASSE ET PROCÉDÉ DE FONCTIONNEMENT DUDIT
ÉQUIPEMENT

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Description

OBJECT OF THE INVENTION

[0001] The present invention relates to the field of fire-arms and, more specifically, to safety devices and mechanisms for hunters or persons participating in hunts or on hunting preserve grounds as described in EP2151657 A.

[0002] The main object of the present invention is hunting safety equipment and a hunting safety procedure that increase hunters' safety by reducing the number of accidents caused by "friendly fire" between hunters positioned in the same line of fire, thereby saving a large number lives.

BACKGROUND OF THE INVENTION

[0003] Numerous current studies confirm that ten million shots are fired annually during hunts and on hunting preserve grounds. Therefore, a hunter often has another hunter or stroller in the same line of fire as potential prey, with the associated grave dangers. Another frequent dangerous situation arises when a hunter, thinking he sees prey hiding behind some bushes, shoots and then realises that it was not an animal but rather a hunting companion, with the ensuing fatal consequences. We are constantly hearing in the media about hunting accidents that occur every year for this reason; as a result of these accidents, many hunters are injured in varying degrees, suffering serious after-effects or even losing their life.

[0004] At present, the only safety systems for hunting events and hunting preserves available on the market are of the optical type, based on the use of reflective vests, the use of which is already mandatory in some Spanish autonomous communities.

[0005] Therefore, the technical problem being raised herein is that current safety systems for hunters and persons participating in hunts or on hunting preserve grounds are ineffective and unsafe systems, as reflective vests, in addition to being useless in certain poor visibility situations, alert the animals of the hunter's presence, allowing them to escape quickly; not to mention the fact that said vests are bothersome and uncomfortable for hunters, who normally prefer not to wear them.

DESCRIPTION OF THE INVENTION

[0006] The present invention aims to solve the aforementioned technical problem by providing hunting safety equipment and an operating procedure for said equipment aimed at increasing the personal safety of hunters, persons who are working on and/or strolling through grounds where hunts are held or belonging to hunting preserves, and even of hunting dogs, and reduces "friendly fire" accidents to a minimum, i.e. fire between hunters in the same line of fire, thereby saving a large

number of lives.

[0007] More specifically, the hunting safety equipment object of the invention is destined for being carried by hunters, hunting dogs and/or persons participating in hunts or on hunting preserve grounds, said hunting safety equipment comprising an emitter device configured to emit electromagnetic signals; a receiver adapted to detect electromagnetic signals emitted by other hunters, hunting dogs and/or persons participating in hunts or on hunting preserve grounds also carrying the hunting safety equipment described herein; and alarm means, preferably acoustic and/or luminous, associated with the receiver device and adapted to become activated and alert the hunter in the event that said receiver device detects an electromagnetic signal emitted by another hunter, warning him that there is another hunter in the direction in which he is pointing his gun, due to which he must abort the shot. The term "another hunter" shall be understood to be a secondary hunter, a person participating in a hunt or strolling through hunting preserve grounds, or even the hunting dogs.

[0008] In accordance with the invention, the hunting safety equipment also comprises a GPS global positioning device which allows the hunter to establish his geographic position at all times, while the aforementioned emitter device comprises wireless transmitter means that include the hunter's geographic position (latitude, longitude and altitude) in the electromagnetic signal emitted. Said wireless transmission means can be based on radio frequency (RF) transmission or on the use of the general packet radio service, better known as GPRS. At this point it is advisable to indicate that when reference is made herein to global positioning system (GPS), it should be understood that it can be based on American, Russian (GLONASS) or European (GALILEO) satellites or any other similar system.

[0009] Likewise, it has been envisaged that the hunting safety equipment object of the invention will also include a device for estimating the orientation of the hunter's gun, adapted to calculate the direction of the shot, i.e. the direction in which the hunter is pointing his gun at any given time, and preferably coupled to the gun barrel. More specifically, said device for estimating the orientation of the gun comprises at least one device selected from among: an electronic compass, an accelerometer and a gyroscope, in accordance with the requirements and needs of each application and wherethrough it is possible to obtain greater accuracy and precision. However, for the purpose of protecting the physical integrity of companions, strollers or even the dogs that frequently accompany hunters at hunts, it has been envisaged that another version of the hunting safety equipment will only include a GPS device, transmitter and receiver devices and alarm means, without an orientation estimation device.

[0010] In accordance with a preferred embodiment, the emitter device comprises a directional transmitting antenna coupled to the hunter's gun barrel, adapted to emit electromagnetic signals only in the direction of fire, pref-

erably at an angle comprised between $\pm 5^\circ$ and $\pm 10^\circ$ with respect to the line of fire, depending on the reach and characteristics of the gun; said emitter device also comprising a multidirectional antenna adapted to emit electromagnetic signals in all directions in the event that the receiver device of a secondary hunter receives electromagnetic signals from a first hunter, indicating that the secondary hunter is being pointed at by the first hunter.

[0011] It has been envisaged that said electromagnetic signals emitted will be radio frequency (RF) signals that include information about the hunters and identification data such as their licence plate number, personal identifier, etc., in order to identify the emitter of said signals. However, in relation to said electromagnetic signals emitted, it has been envisaged that these can also be audible or luminous, such as a laser beam, where each hunter must be equipped in this specific case with a vest or fabric especially adapted to detect said light beams. Similarly, for the purpose of protecting companions, strollers and/or hunting dogs, it has been envisaged that a much simpler version of the hunting safety equipment will only include transmitter and receiver devices and alarm means, without a directional emitting antenna.

[0012] Further, in accordance with a preferred embodiment, the emitter device comprises a multidirectional antenna adapted to emit electromagnetic signals in all directions, while the receiver device preferably comprises a directional receiving antenna coupled to the hunter's gun barrel, adapted to receive only electromagnetic signals in the gun's direction of fire so that the other signals received by the hunter do not affect his decision as to whether or not to fire the shot. Similarly, in order to protect companions, strollers and/or hunting dogs, it has been envisaged that a simpler version of the hunting safety equipment of the present invention will only include transmitter and receiver devices and alarm means, without a directional receiving antenna.

[0013] Additionally, it has been envisaged that the hunting safety device described herein can also comprise means for disabling a gun's trip function in the event that the alarm means become activated, indicating that there is another hunter in a hunter's line of fire.

[0014] Likewise, the hunting safety equipment can also comprise data storage means for saving and recording the hunters' identification data, positions, distances, dates, times or miscellaneous information that could aid a possible investigation in the event of an accident.

[0015] Lastly, it must be noted that the hunting safety equipment of the present invention is applicable both to hunts and hunting preserves and to State security forces (army, police, etc.), and even to leisure and recreational activities such as paintball.

DESCRIPTION OF THE DRAWINGS

[0016] In order to complement the description being made and with the object of helping to better understand the characteristics of the invention, in accordance with a

preferred embodiment thereof, said description is accompanied, as an integral part thereof, by a set of drawings where, in an illustrative and non-limiting manner, the following has been represented:

Figures 1A and 1B show schematic views of a first preferred embodiment of the hunting safety equipment object of the invention.

Figures 2A and 2B show schematic views of a second preferred embodiment of the hunting safety equipment object of the invention.

Figures 3A and 3B show schematic views of a third preferred embodiment of the hunting safety equipment object of the invention.

PREFERRED EMBODIMENT OF THE INVENTION

[0017] Following are several examples of preferred embodiments making reference to the foregoing figures, without limiting the scope of protection of the present invention in any way.

[0018] In a first preferred embodiment, shown in figures 1A and 1B, the hunting safety equipment (1) destined for being carried by hunters (3, 3'), hunting dogs and/or persons participating in hunts or on hunting preserve grounds, comprises:

- a GPS global positioning device (40) configured to locate the geographic position of each hunter (3, 3');
- an emitter device (10) which in the present embodiment comprises wireless transmission means (14) whereby radio frequency electromagnetic signals (11) that include the GPS position of each hunter (3, 3') are sent;
- a receiver device (20) adapted to detect the GPS positions of other hunters (3'), hunting dogs and/or persons participating in the hunts or on hunting preserve grounds;
- a device for estimating the orientation (50) of the hunter's (3) gun (2) adapted to calculate the direction of fire; and
- acoustic and/or audible alarm means (30) associated with the receiver device (20), adapted to become activated and alert the hunter (3) in the event that said receiver device (20) detects the GPS position of another hunter (3') in the direction of fire calculated by the orientation estimation device (50).

[0019] In a second preferred embodiment of the hunting safety equipment (1) shown in figures 2A and 2B, the basic difference with respect to the first embodiment is that here the emitter device (10) comprises a directional emitting antenna (12) coupled to the hunter's (3) gun (2) barrel, adapted to emit RF electromagnetic signals (11) only in the gun's direction of fire (2), but no GPS device (40) or device for estimating the orientation (50) of the gun (2); and a multidirectional antenna (13) adapted to emit electromagnetic response signals (11') in all direc-

tions in the event that the receiver device (20) receives electromagnetic signals (11) from the first hunter (3).

[0020] Lastly, figures 3A and 3B show schematic views of the third preferred embodiment of the hunting safety equipment (1), where in this case the emitter device (10) comprises, in addition to the alarm means (30), a multi-directional antenna (13) adapted to emit electromagnetic signals (11) in all directions; and where the receiver device (20) comprises a directional receiving antenna (21) coupled to the hunter's (3) gun (2) barrel, adapted to detect electromagnetic signals (11) in the gun's (2) direction of fire.

[0021] In accordance with another object of the invention, following is a description of the operating procedures for each of the three embodiments of the previously described hunting safety equipment (1). According to the first preferred embodiment of the equipment, the operating procedure comprises:

- a1) constant emission of the GPS geographic position by each hunter (3) to the other hunters (3'), as shown in figure 1A;
- a2) determination of the orientation of the hunter's (3) gun (2); and
- a3) emission of a warning signal to the hunter (3) in the event that his receiver device (20) detects the GPS position of another hunter (3') in his line of fire, as can be observed in figure 1B.

[0022] In accordance with the present embodiment, stage a1) is executed by means of a GPS global positioning device (40) and wireless transmission means (14). In turn, stage a2) is executed by at least one device for estimating the orientation (50) of the gun (2) selected from among: an electronic compass, an accelerometer and a gyroscope.

[0023] In turn, in accordance with the second preferred embodiment of the equipment, the operating procedure for the hunting safety equipment (1) comprises:

- b1) emission of an electromagnetic signal (11) by a first hunter (3) in the direction of fire of his gun (2), as represented in figure 2A;
- b2) instant emission by a second hunter (3') of an electromagnetic response signal (11') in all directions (omnidirectional), as can be observed in figure 2B), in the event that said second hunter (3') receives the signal emitted by the first hunter (3), indicating that the second hunter (3') is in the first hunter's (3) line of fire; and
- b3) emission of a warning signal to the first hunter (3) upon detecting the electromagnetic response signal (11') emitted by the second hunter (3').

[0024] In the present embodiment, stage b1) is executed by means of a directional emitting antenna (12) coupled to the gun (2) barrel, said directional emitting antenna (12) emitting electromagnetic signals (11) at an

angle of $\pm 5^\circ$ with respect to the line of fire, as shown in figure 2B, said signals including the hunter's (3) identification data. However, it has been envisaged that said electromagnetic signal (11) emitted in said stage b1) will be a luminous signal by means of a laser beam.

[0025] Lastly, according to the previously described third preferred embodiment of the equipment, the operating procedure comprises:

- c1) constant emission of an electromagnetic signal (11) in all directions by each hunter (3, 3') from the outset, as shown in figure 3A; and
- c2) emission of a signal warning to the hunter (3) that he is pointing at with his gun (2), in the event that his receiver device (20), in this case the directional receiving antenna (21), detects the electromagnetic signal (11) emitted by another hunter (3') in his line of fire, as represented in figure 3B.

[0026] In the three aforementioned embodiments, stages a3), b3) and c2) are executed by means of acoustic and/or audible alarm means. Lastly, it should be noted that when reference is made to electromagnetic signals (11) in the three previously described embodiments, it has been envisaged that these can be radio frequency (RF) signals, GPRS signals, ultrasonic signals or a light source.

[0027] Also, as mentioned earlier, when the terms "another hunter (3)" or "second hunter (3)" are used, they shall be understood to be equally applicable to the "hunting dogs" that often accompany the hunters (3) and which can be visually confused with potential prey. Therefore, the physical integrity of the dogs is protected by simply coupling the hunting safety equipment (1) of the present invention to the dogs' collars.

Claims

1. Hunting safety equipment (1) destined for being carried by hunters (3), hunting dogs and/or persons participating in said hunts or on hunting preserve grounds, comprising:
 - an emitter device (10) configured to emit electromagnetic signals (11);
 - a receiver device (20) adapted to detect the electromagnetic signals (11) generated by emitters (10) from other hunters (3'), hunting dogs and/or persons participating in said hunts or on hunting preserve grounds carrying another hunting safety equipment (1);
 - a GPS global positioning device (40) for including the geographic position of each hunter (3, 3') in the electromagnetic signal (11) emitted by the emitter (10); and
 - a device for estimating the orientation (50) of fire of the hunter (3) for including such orienta-

- tion (50) in the electromagnetic signal (11) emitted by the emitter (10);
 - alarm means (30) associated with the receiver device (20), adapted to become activated and alert the hunter (3) in the event that said receiver device (20) detects an electromagnetic signal (11) emitted by another hunter (3') indicating that the one of the hunters is in the orientation (50) of fire of the other.
2. Hunting safety equipment (1), according to claim 1, wherein the device for estimating the orientation (50) of fire of the hunter (3) is attachable to a gun (2) barrel.
3. Hunting safety equipment (1), according to claim 1, wherein the device for estimating the orientation (50) of fire of the hunter (3) comprises at least one device selected from among:
- an electronic compass;
 - an accelerometer; and
 - a gyroscope.
4. Hunting safety equipment (1), according to any one of the preceding claims, also comprising data storage means (70) for saving and recording the hunters' (3, 3') identification data, positions, distances, dates, times or miscellaneous data that could aid a possible investigation in the event of an accident.
5. Operating procedure for the hunting safety equipment (1), described in any one of preceding claims 1 to 4, comprising the following stages:
- a1) constant emission by each hunter (3) of their geographic position to the other hunters (3');
 a2) determination of the orientation of fire of the hunter (3); and
 a3) emission of a warning signal to the hunter (3) in the event that his receiver device (20) receives the electromagnetic signal generated by the emitter (10) of another hunter and determines if the geographic position of the another hunter (3') is in his line of fire.
6. Operating procedure, according to claim 5, wherein stage a1) is executed by means of the GPS global positioning device (40) and wireless transmission means (14).
7. Operating procedure, according to claim 5, wherein stage a2) is executed by means of at least one device for estimating the orientation (50) of the gun (2), selected from among:
- an electronic compass;
 - an accelerometer; and
 - a gyroscope.
8. Operating procedure for the hunting safety equipment (1), described in any one of preceding claims 1 to 4, comprising the following stages:
- b1) emission of an electromagnetic signal (11) in the direction of fire of the first hunter's (3) gun (2);
 b2) instant emission by a second hunter (3') of an omnidirectional electromagnetic response signal (11') in the event that said second hunter (3') receives the signal emitted by the first hunter (3), indicating that the second hunter (3') is in the first hunter's (3) line of fire; and
 b3) emission of a warning signal to the first hunter (3) upon detecting the electromagnetic response signal (11') emitted by the second hunter (3').
9. Operating procedure, according to claim 8, wherein stage b1) is executed by means of a directional emitting antenna (12) coupled to the hunter's (3) gun (2) barrel.
10. Operating procedure, according to claim 8, wherein the electromagnetic signal emitted in said stage b1) is a radio frequency signal.
11. Operating procedure, according to claim 10, wherein the radio frequency signal includes the hunter's (3) identification data.
12. Operating procedure, according to claim 10, wherein the electromagnetic signal emitted in said stage b1) is a luminous signal by means of a laser beam.
13. Operating procedure for hunting safety equipment (1), described in any one of preceding claims 1 to 4, comprising the following stages:
- c1) constant emission of an electromagnetic signal (11) in all directions by each hunter (3, 3'); and
 c2) emission of a warning signal to the hunter (3) alerting him that he is pointing at another hunter (3') with his gun (2), in the event that his receiver device (20) detects the electromagnetic signal (11) emitted by another hunter (3') in his line of fire.
14. Operating procedure, according to claims 5, 8 or 13, wherein stages a3), b3) and c2) are executed by means of acoustic and/or audible alarm means (30).

Patentansprüche

1. Jagdsicherheitsvorrichtung (1), die dafür vorgesehen ist, von Jägern (3) getragen zu werden, wobei Jagdhunde und/oder Personen an diesen Jagden teilnehmen oder auf dem Jagdgelände anwesend sind, umfassend:
 - eine Sendervorrichtung (10), die dazu konzipiert ist, elektromagnetische Signale (11) auszugeben;
 - eine Empfängervorrichtung (20), die dazu ausgelegt ist, elektromagnetischen Signale (11) zu erkennen, die von Sendern (10) anderer Jäger (3'), Jagdhunde und/oder an diesen Jagden teilnehmenden oder auf dem Jagdgelände anwesenden Personen erzeugt werden, die eine andere Jagdsicherheitsvorrichtung (1) tragen;
 - ein GPS-Satellitennavigationsgerät (40), um die geografische Position jedes Jägers (3, 3') in das vom Sender (10) ausgegebene elektromagnetische Signal (11) einzuschließen; und
 - eine Vorrichtung zur Schätzung der Schussrichtung (50) des Jägers (3), um diese Richtung (50) in das vom Sender (10) ausgegebene Signal (11) einzuschließen;
 - Alarmmittel (30), die mit der Empfängervorrichtung (20) verknüpft und dazu ausgelegt sind, in dem Fall aktiviert zu werden und den Jäger (3) zu warnen, dass diese Empfängervorrichtung (20) ein von einem anderen Jäger (3') ausgegebenes elektromagnetisches Signal (11) erkennt, das anzeigt, dass einer der Jäger sich in der Schussrichtung (50) des anderen befindet.
2. Jagdsicherheitsvorrichtung (1) nach Anspruch 1, wobei die Vorrichtung zur Schätzung der Schussrichtung (50) des Jägers (3) am Lauf eines Gewehrs (2) befestigt werden kann.
3. Jagdsicherheitsvorrichtung (1) nach Anspruch 1, wobei die Vorrichtung zur Schätzung der Schussrichtung (50) des Jägers (3) mindestens eine der aus den nachstehenden Vorrichtungen ausgewählte Vorrichtung umfasst:
 - einen elektronischen Kompass;
 - einen Beschleunigungsmesser; und
 - ein Gyroskop.
4. Jagdsicherheitsvorrichtung (1) nach einem der vorstehenden Ansprüche, die außerdem Datenspeicherungsmittel (70) zur Speicherung und Aufzeichnung der Identifizierungsdaten, Positionen, Abstände, Datumsangaben, Zeiten oder sonstigen Daten der Jäger (3, 3') umfasst, die eine mögliche Untersuchung im Falle eines Unfalls unterstützen könnten.
5. Betriebsverfahren für die in einem der vorstehenden Ansprüche 1 bis 4 beschriebene Jagdsicherheitsvorrichtung (1), das die folgenden Phasen umfasst:
 - a1) konstante Ausgabe der geografischen Position jedes Jägers (3) an die anderen Jäger (3'); a2) Bestimmung der Schussrichtung des Jägers (3); und
 - a3) Ausgabe eines Warnsignals an den Jäger (3), falls seine Empfängervorrichtung (20) das vom Sender (10) eines anderen Jägers erzeugte elektromagnetische Signal empfängt und bestimmt, ob die geografische Position des anderen Jägers (3') in seiner Schusslinie ist.
6. Betriebsverfahren nach Anspruch 5, wobei die Phase a1) mit dem GPS-Satellitennavigationsgerät (40) und drahtlosen Übertragungsmitteln (14) ausgeführt wird.
7. Betriebsverfahren nach Anspruch 5, wobei die Phase a2) mit mindestens einer aus den folgenden Vorrichtungen ausgewählten Vorrichtung zur Schätzung der Richtung (50) des Gewehrs (2) ausgeführt wird:
 - ein elektronischer Kompass;
 - ein Beschleunigungsmesser; und
 - ein Gyroskop.
8. Betriebsverfahren für die in einem der vorstehenden Ansprüche 1 bis 4 beschriebene Jagdsicherheitsvorrichtung (1), das die folgenden Phasen umfasst:
 - b1) Ausgabe eines elektromagnetischen Signals (11) in die Schussrichtung des Gewehrs (2) des ersten Jägers (3);
 - b2) Sofortige Ausgabe eines omnidirektionalen elektromagnetischen Antwortsignals (11') von einem zweiten Jäger (3'), falls dieser zweite Jäger (3') das vom ersten Jäger (3) ausgegebene Signal empfängt, das anzeigt, dass sich der zweite Jäger (3') in der Schusslinie des ersten Jägers (3) befindet; und
 - b3) Ausgabe eines Warnsignals an den ersten Jäger (3), wenn das vom zweiten Jäger (3') ausgegebene Antwortsignal (11') erkannt wird.
9. Betriebsverfahren nach Anspruch 8, wobei die Phase b1) mit einer directional ausstrahlenden Antenne (12) ausgeführt wird, die mit dem Lauf des Gewehrs (2) des Jägers (3) gekoppelt ist.
10. Betriebsverfahren nach Anspruch 8, wobei das in dieser Phase b1) ausgegebene elektromagnetische Signal ein Funksignal ist.
11. Betriebsverfahren nach Anspruch 10, wobei das

Funksignal die Identifizierungsdaten des Jägers (3) einschließt.

12. Betriebsverfahren nach Anspruch 10, wobei das in dieser Phase b1) ausgegebene elektromagnetische Signal ein Leuchtsignal eines Laserstrahls ist. 5
13. Betriebsverfahren für die in einem der vorstehenden Ansprüche 1 bis 4 beschriebene Jagdsicherheitsvorrichtung (1), das die folgenden Phasen umfasst: 10
- c1) Konstante Ausgabe eines elektromagnetischen Signals (11) von jedem Jäger (3, 3') in alle Richtungen;
- c2) Ausgabe eines Warnsignals an den Jäger (3), um diesen zu warnen, dass er mit seinem Gewehr (2) auf einen anderen Jäger (3') zielt, wenn seine Empfängervorrichtung (20) das von einem anderen Jäger (3') in seiner Schusslinie ausgegebene elektromagnetische Signal (11) erkennt. 15 20
14. Betriebsverfahren nach Anspruch 5, 8 oder 13, wobei die Phasen a3), b3) und c2) von einem akustischen und/oder hörbaren Alarmmittel (30) ausgeführt werden. 25

Revendications

1. Équipement de sécurité pour la chasse (1) destiné à être porté par des chasseurs (3), des chiens de chasse et/ou des personnes qui participent à ladite chasse ou qui se trouvent sur des réserves de chasse, qui comprend : 30
- un dispositif émetteur (10) configuré pour émettre des signaux électromagnétiques (11);
- un dispositif récepteur (20) adapté pour détecter les signaux électromagnétiques (11) émis par les émetteurs (10) d'autres chasseurs (3'), ceux des chiens de chasse et/ou des personnes qui participent à ladite chasse ou qui se trouvent sur des réserves de chasse et qui portent un autre équipement de sécurité pour la chasse (1); 35 40
- un dispositif de positionnement global GPS (40) pour déterminer la position géographique de chaque chasseur (3, 3') dans le signal électromagnétique (11) émis par l'émetteur (10); et 45
- un dispositif d'estimation de l'orientation (50) de tir du chasseur (3) comprenant une telle orientation (50) dans le signal électromagnétique (11) émis par l'émetteur (10);
- des moyens d'alarme (30) au cas où ledit dispositif récepteur (20) détecte un signal électromagnétique (11) émis par un autre chasseur (3') qui indique que l'un des chasseurs se trouve 50 55

dans l'orientation (50) de tir de l'autre.

2. Équipement de sécurité pour la chasse (1), selon la revendication 1, où le dispositif d'estimation de l'orientation (50) de tir du chasseur (3) peut être fixé sur un canon (2) de fusil.
3. Équipement de sécurité pour la chasse (1), selon la revendication 1, où le dispositif d'estimation de l'orientation (50) de tir du chasseur (3) comprend au moins un dispositif sélectionné parmi les suivants : 60
- un compas électronique;
 - un accéléromètre; et
 - un gyroscope.
4. Équipement de sécurité pour la chasse (1), selon l'une quelconque des revendications précédentes, comprenant en outre des moyens de stockage des données (70) pour sauvegarder et enregistrer des données d'identification, des positions, des distances, des dates, des durées ou d'autres données diverses se rapportant aux chasseurs (3, 3') qui peuvent être utiles en cas d'enquête éventuelle sur un accident.
5. Méthode de fonctionnement de l'équipement de sécurité pour la chasse (1), telle que décrite dans l'une quelconque des revendications précédentes 1 à 4, qui comprend les étapes suivantes : 65
- a1) émission constante de sa position géographique par chaque chasseur (3) aux autres chasseurs (3') ;
- a2) détermination de l'orientation de tir du chasseur (3) ; et
- a3) émission d'un signal d'avertissement au chasseur (3) dans le cas où son dispositif récepteur (20) reçoit le signal électromagnétique émis par l'émetteur (10) d'un autre chasseur, et que celui-ci détermine si la position géographique de l'autre chasseur (3') se trouve dans sa ligne de tir.
6. Méthode de fonctionnement, selon la revendication 5, où l'étape a1) est exécutée par un dispositif de positionnement global GPS (40) et des moyens de transmission sans fil (14).
7. Méthode de fonctionnement, selon la revendication 5, où l'étape a2) est exécutée au moyen d'au moins un dispositif d'estimation de l'orientation (50) du fusil (2), sélectionné parmi les suivants : 70 75
- un compas électronique;
 - un accéléromètre; et
 - un gyroscope.

8. Méthode de fonctionnement d'un équipement de sécurité pour la chasse (1), telle que décrite dans l'une quelconque des revendications précédentes 1 à 4, qui comprend les étapes suivantes :
- 5
- b1) émission d'un signal électromagnétique (11) dans la direction de tir du fusil (2) du premier chasseur (3) ;
- b2) émission immédiate d'un signal de réponse électromagnétique omnidirectionnel (11') par un deuxième chasseur (3') dans le cas où ledit deuxième chasseur (3') reçoit le signal émis par le premier chasseur (3) lui indiquant que le deuxième chasseur (3') se trouve dans la ligne de tir du premier chasseur (3) ; et
- 10
- b3) émission d'un signal d'avertissement au premier chasseur (3) après la détection du signal de réponse électromagnétique (11') émis par le deuxième chasseur (3').
- 15
- 20
9. Méthode de fonctionnement, selon la revendication 8, où l'étape b1) est exécutée au moyen d'une antenne d'émission directionnelle (12) reliée au canon du fusil (2) du chasseur (3).
- 25
10. Méthode de fonctionnement selon la revendication 8, où le signal électromagnétique émis pendant ladite étape b1) est un signal radiofréquence.
- 30
11. Méthode de fonctionnement selon la revendication 10, où le signal radiofréquence inclut les données d'identification des chasseurs (3).
- 35
12. Méthode de fonctionnement selon la revendication 10, où le signal électromagnétique émis pendant ladite étape b1) est un signal lumineux produit par un faisceau laser.
- 40
13. Méthode de fonctionnement d'un équipement de sécurité pour la chasse (1), telle que décrite dans l'une quelconque des revendications précédentes 1 à 4, qui comprend les étapes suivantes :
- c1) émission constante d'un signal électromagnétique (11) dans toutes les directions par chaque chasseur (3, 3') ; et
- 45
- c2) émission d'un signal d'avertissement au chasseur (3) pour l'alerter lorsqu'il est en train de pointer un autre chasseur (3') avec son fusil (2), dans le cas où son dispositif récepteur (20) détecte le signal électromagnétique (11) émis par un autre chasseur (3') dans sa ligne de tir.
- 50
14. Méthode de fonctionnement, selon les revendications 5, 8 et 13, où les étapes a3), b3) et c2) sont exécutées par des moyens d'alarme sonores et/ou audibles (30).
- 55

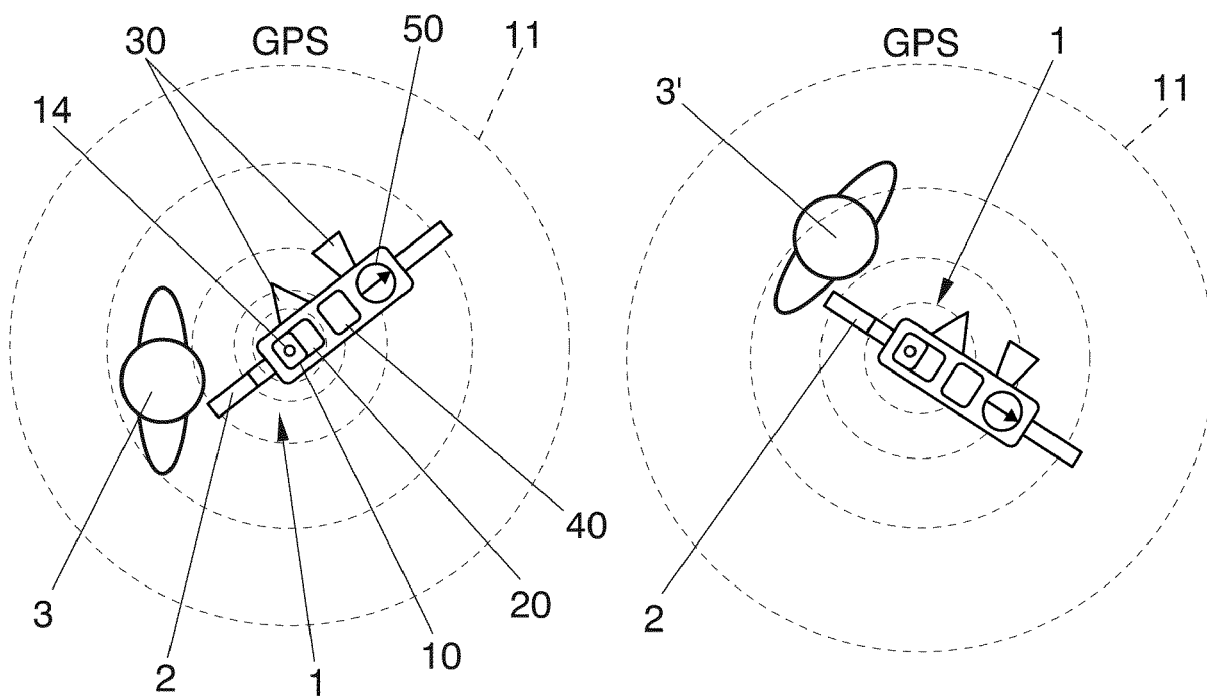


FIG. 1A

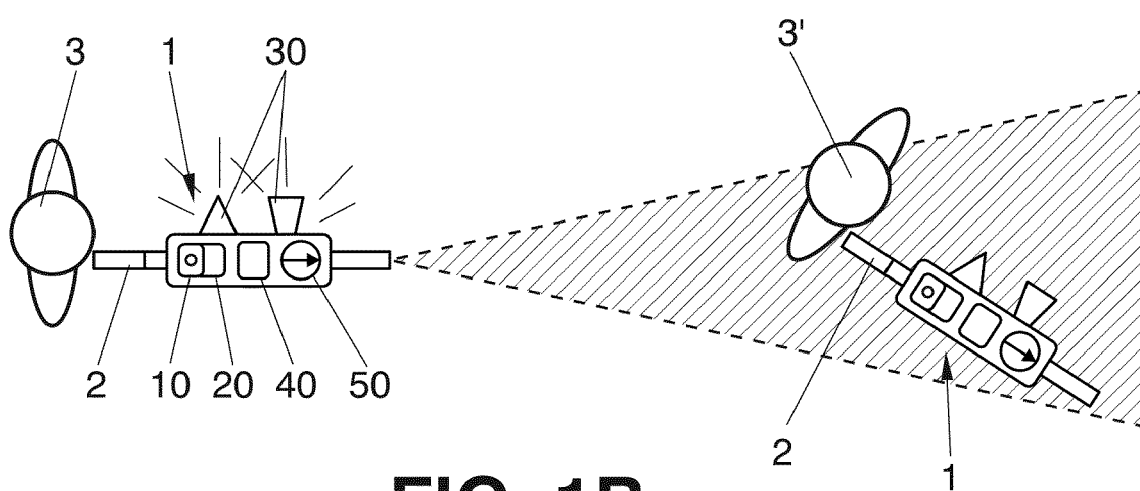


FIG. 1B

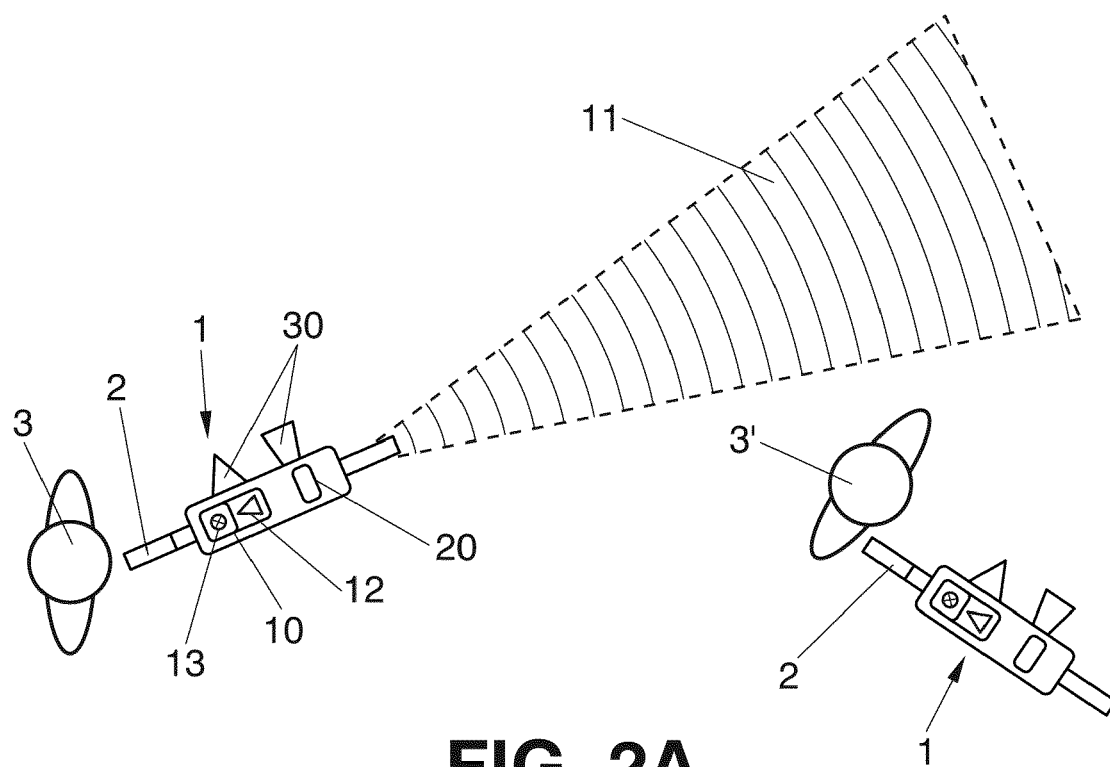


FIG. 2A

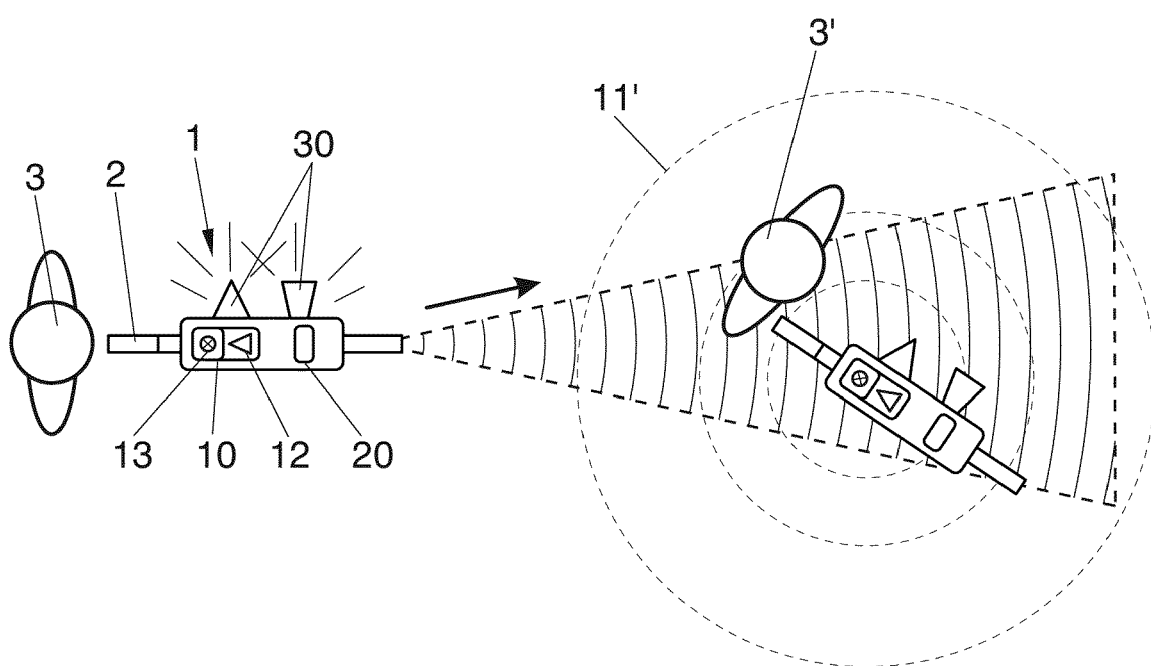


FIG. 2B

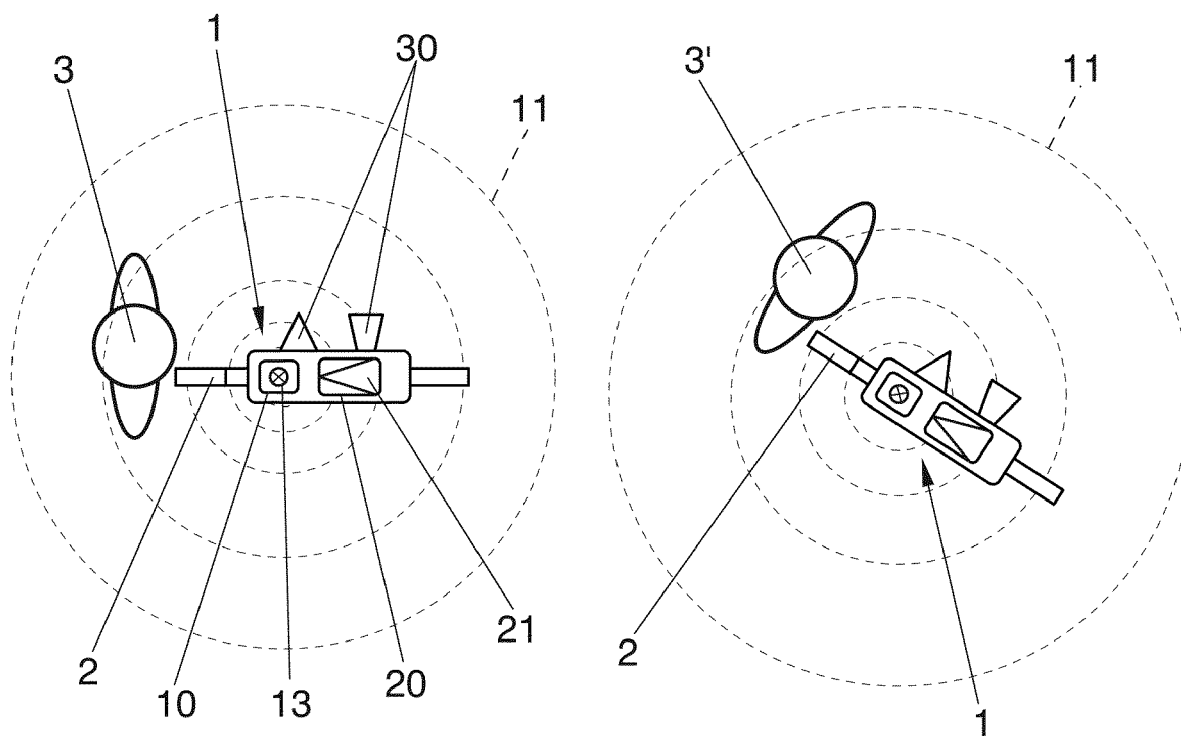


FIG. 3A

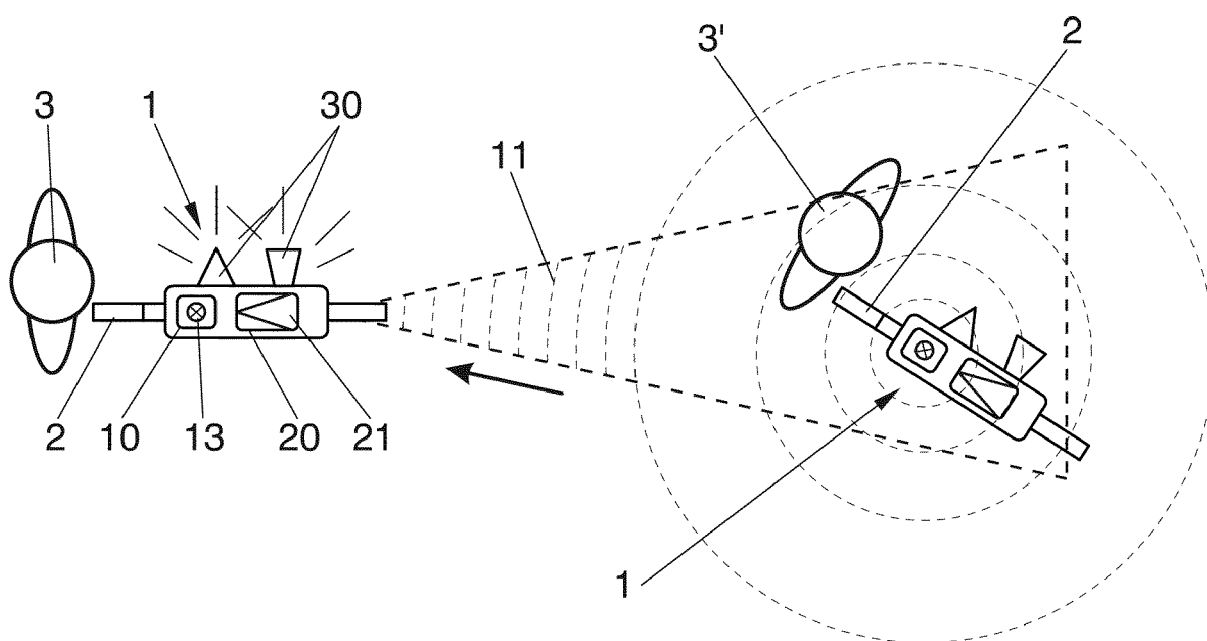


FIG. 3B

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 2151657 A [0001]