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(54) **Perimeter surveillance method using RFID acceleration detectors**

(57) Method of perimeter security using RFID acceleration detectors when the individual divisions 3 of fence or gate 4 are placed object RFID acceleration detectors 1, capable of overcoming the perimeter intruder 10 detection, to detect any climatic effects, that would otherwise cause a false alarm, that detect tampering of the system and capable of detecting the quality of work17 performed patrol Guardian 15 around the entire perimeter.

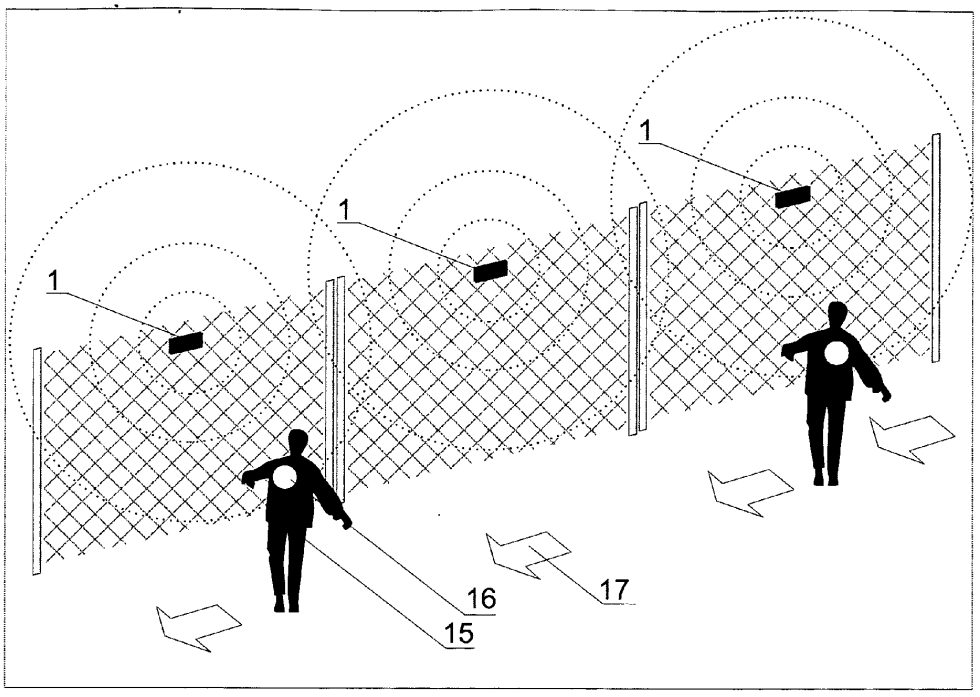

Fig. 8

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Description

Technical Field

[0001] The invention relates to surveillance of the fenced perimeter of a piece of land (hereinafter referred to as "the perimeter") using the technology of RFID acceleration detectors.

Current Technical State

[0002] The following perimeter surveillance methods are currently available:

1. Surveillance of the perimeter using **special sensitive cabling buried in the ground** around the perimeter detecting an intruder based on pressure, seismic, induction, or magnetic changes, which this cabling is capable to detect along its entire length.
The disadvantage is the high cost of the technology, extensive excavation work and highly specialized installation of the technology. The installation is difficult due to the fact that this sensitive cabling must be placed almost entirely along the perimeter, and the technology eliminates installation in very low temperatures. Another disadvantage is the difficulties associated with crossing a road that intersects the perimeter (hereinafter referred to as "the road"), causing interruption of the detection zone at this point. Another disadvantage is the need to interrupt the detection zone at the road.
2. Surveillance of the perimeter with **sensor cabling installed directly on the fence** of a perimeter detecting an intruder on based on pressure or seismic changes, which this type of cabling is able to detect. Electro-mechanical phenomenon known as the triboelectric effect initiated by these movements enables a transfer/conduction of the charge between the wires in the cable, which results in an alternating current voltage at the end of the cabling indicating violation of the perimeter.
The disadvantage is a high-cost technology and costs associated with a highly specialized installation of technology. Installation is difficult due to the fact that this sensitive cable must be placed almost entirely along the perimeter. Another disadvantage is the need to interrupt the detection zone at the doors, gates, which interrupts the perimeter circuit. And another disadvantage is its low resistance to false alarms caused by environmental factors, especially by wind, hail, rain, seismic shocks, or a shock wave caused by cars passing near the fence, etc. (hereinafter referred to as "environmental effects"). The sensory cables can also be damaged by lightning.
3. Surveillance of the perimeter using **microwave barriers** installed around the perimeter:
The disadvantage of this method is that the area between the microwave barrier sensors must be aligned, and no object may interrupt the beam path. Existence of standing water is not allowed in the line between the sensors, because it creates moving reflective zones for the microwaves. Another disadvantage of this method is that it also responds to disruptive mechanical stimulants and stimulants resulting from e.g. wind-borne litter. The disadvantage is high-cost technology as well as the costs associated with highly specialized technology installation.
4. Perimeter surveillance using **Infrared barriers (infrared detectors)** installed along the perimeter.
The disadvantage of this method is that the area between the sensors and infrared barrier must be aligned and no object may interrupt the beam path. The disadvantage is the high cost of technology as well as of highly specialized technology installation. The fact that it also responds to stimulants such as wind-borne litter is considered another disadvantage. Also, the disadvantage is that the receiver functions can be affected by the rays of sun, which may disable the receiving sensors in case that the sun rays fall directly on the infrared receiver.
5. The perimeter surveillance with **Passive infrared detectors** installed along the perimeter:
The sensors are focused on the infrared band. The sensor continuously reads the ambient temperature and once an intruder appears within reach, the change in the temperature field, if the set limit is exceeded, is considered an alarm.
The disadvantage of this method is that it is possible for the intruder to use countermeasures through shading, covering, or other types of masking of thermal radiation. Another disadvantage is that the receiver functions can be affected by sun rays, which may disable the receiving sensors in case that the sun rays fall directly on the infrared receiver.
6. Perimeter surveillance using **image detection from security cameras** installed along the perimeter:
The disadvantage is the high cost of both technology and highly specialized technology installation, which falls within the field of CCTV and optics. The disadvantage of this method is that it only works with fixed, non-portable cameras, which do not enable rotation and zooming, whereas the detection zone must be adequately lit at night. The reliability of detection can be thus reduced if visibility is reduced in the camera view - fog, snow, and heavy rain, change of lighting conditions from day to night. Another disadvantage is that the intruder detection function in the video is too technically difficult and unreliable, because sharp moving shadows (caused by the moving branches of trees or by the clouds) and moving sharp spots of light (e.g. the headlights of passing cars, etc.) can cause false alarms.

Fundamental Principles of the Invention

[0003] The main principal of the invention is the placement of RFID acceleration tags on individual sections of the fence, or on gates, doors, etc. (hereinafter referred to as "the gate") and placement of evaluation unit (or units) within range of RFID acceleration detectors or retransmitting modules that can be formed by the RFID acceleration detectors themselves. The RFID acceleration detectors are placed on the fence into the upper part of vertical centres of each fence section on its top, or directly on the gate by mechanical mounting (e.g. bolting or riveting, etc.).

[0004] The RFID acceleration detectors detects whether a fence or a gate (hereinafter referred to as "the perimeter") is being climbed over by an intruder based on the readings of mechanical vibrations in the actual structure of the perimeter in the location of the incident. Vibrations resulting from crossing the perimeter by an intruder are shown in the three axes of a spatial system of coordinates in the case of a stationery fence, and in all the axes of a spatial system of coordinates in case the of a mechanically unstable fence. The RFID acceleration detector can assess and evaluate these vibrations, and send the information to an evaluation or a retransmitting unit. Whether this is a violation of the perimeter by the intruder or not is decided directly by the RFID acceleration detector, retransmitting or evaluation unit based on the setting. The system is able to distinguish climbing over the perimeter by the intruder from the effect of environmental factors such as wind, hailstorm, rain, seismic shocks, and the shock waves caused by the passing of cars near the fence, etc. (hereinafter referred to as "environmental effects") in that these environmental effects influence all the RFID acceleration detectors located on the perimeter simultaneously. The system is able to accurately detect the location of an incident where the perimeter was intruded with an accuracy of one section of the fence.

[0005] The system is able to detect tampering of an RFID acceleration detector placed on the fence by an intruder. Tampering with an RFID acceleration detector means removing the RFID accelerator detector from the fence, or removing or damaging that part of the fence on which the RFID acceleration detector was placed. The fence typically contains two axes perpendicular to the axis, in which the RFID acceleration detector moves while an intruder is climbing over the fence (gate) in which the RFID acceleration detector is not moving. These two axes, however, due to the tampering with the RFID acceleration detector are no longer in relative inactivity and thanks to this the system can distinguish tampering with the RFID acceleration detector on the fence from the normal operating conditions. The decision on whether the detector tamper caused by the intruder is a matter of concern is provided directly by the RFID acceleration detectors, retransmitting or evaluation unit according to their setting.

The system is able to detect tamper of the RFID detector by the intruder even if the RFID detector (which is not in a state of surveillance) is located at the gate of the fence, and even in the case that the gate may be moving when opening or closing under a normal operating mode. The tampering with an RFID acceleration detector means removing the RFID acceleration detector from the fence, or removing or damaging of the part of the fence on which the RFID acceleration detector was located.

Regarding linear gates and doors and a typical direction of motion of the RFID acceleration detector when opening or closing the linear gates or doors, there is always a consistent direction of motion, and the third axis that is perpendicular to the axis of motion as well as the axis in which the RFID acceleration detector moves when climbing over the fence (gate) by an intruder, is always in relative inaction. This third axis, however, due to tampering with the RFID acceleration detector, is no longer in relative inaction, and thanks to this, the system can distinguish the tampering with the RFID acceleration detector on the fence from the normal operating conditions.

The opposite situation is in the case of the swinging gate (open by rotation) and doors where a typical direction of motion of the RFID acceleration detector when opening or closing the gate is always in one plane perpendicular to the axis of rotation of the gate, and a third axis that is perpendicular to this plane is always in relative inactivity. However, this third axis is due to the implementation of tampering with the RFID acceleration detector not in relative inactivity, and thanks to this fact the system can distinguish tampering with the RFID acceleration detector on the swinging gate from the normal operating conditions.

The decision on whether the detector tampering caused by the intruder is a matter of concern is provided directly by the RFID acceleration detector, retransmitting or evaluation unit according to their setting.

[0006] The system is able to detect the quality of patrols by security guards around the perimeter. In the event that the security guard moves within an adjustable range, with his/her RFID tag, of the RFID acceleration tag installed in each fence or gate section, this fact is evaluated in the RFID acceleration detector or the RFID tag, retransmitting or evaluation unit as a performed act, including time information. This makes it possible to monitor and check the proper conduct of patrols using RFID acceleration detectors installed around the perimeter. The security guard does not need to manipulate with his/her RFID tag in any way.

List of Illustrations in Technical Drawings

[0007] The invention is explained in greater detail in the accompanying drawings, where Figure 1 shows the invention concept where the RFID acceleration detectors communicate directly with the evaluation unit. Figure 2 shows the invention concept where the RFID acceleration detectors communicate with the evaluation unit via

the retransmitting modules. Figure 3 shows the concept where the RFID acceleration detectors communicate with the evaluation unit via retransmissions, which consist of the RFID acceleration detectors themselves. Figure 4 shows the invention when the perimeter is being climbed over by an intruder. Figure 5 shows the location of an RFID acceleration detector on a section of a fence. Figure 6 shows the location of RFID acceleration detector on a linear gate. Figure 7 illustrates the location of an RFID acceleration detector on a swinging gate.

Examples of the Invention Concept

Example 1

[0008] According to Example 1, the invention is constructed so that an RFID acceleration detector 1 detects whether an intruder 10 climbs over a fence section 3 or a gate 4 based on the readings of mechanical vibrations of the construction of a fence section 3 or a gate 4 in the location of this incident. The RFID acceleration detector 1 is able to evaluate the vibrations and send this information via the communication channel 5 to an evaluation unit 6. The system is able to distinguish between the intruder incident (climbing over the fence) at the fence section 3 or the gate 4 and the atmospheric disturbances such as wind, hailstorm, rain, seismic shocks, shock waves from the passing cars near the fence, etc. by affecting all the RFID acceleration detectors 1 located at the perimeter simultaneously. When the intruder 10 climbs over the perimeter, movement of the RFID acceleration detector 1 is in the area perpendicular to the axis 11 of a fence section 3 or a gate 4 in the location of the incident significantly higher than the movement of RFID acceleration detectors 1 in the axis 11 perpendicular to the area of fence section 3 in the place where there is no disturbance by the intruder 10. The system is immune to the environmental effects that would otherwise cause false alarms by the fact that movements of RFID acceleration detectors 1 in the axis 11 perpendicular to the area of fence sections 3 are almost identical in all fence sections 3, because these environmental effects occur on the entire length of the perimeter simultaneously.

[0009] The system is able to detect tampering with the RFID acceleration detector 1 located on a fence section 3 or a gate 4 caused by an intruder 10. The RFID acceleration detector 1 tampering means removing the RFID acceleration detector 1 from a fence section 3 or a gate 4 or removing or damaging a part of the fence section 3 or the gate 4, on which the RFID acceleration detector 1 was located. There are two axes 12 and 13 on individual sections of the fence 3 or the gate 4 which are perpendicular to the axis 11 in which the RFID acceleration detector 1 is in motion during the intruder's 10 attempt to climb over the section 3 of the fence or the gate 4 in which the RFID acceleration detector 1 is not moving. The RFID acceleration detector 1 in the axes 12, 13 is due to the tampering in motion, and thanks to this, the system is able to distinguish tampering with the RFID acceleration detector 1 on a fence section 3 or a gate 4 from the normal operating conditions. The decision on whether the tampering caused by the intruder 10 is a matter of concern is provided directly by the RFID acceleration detector 1, or the evaluation unit 6 according to the system setting.

[0010] The system is able to detect a tampering with the RFID acceleration detector 1 by an intruder 10 even in the case that the RFID acceleration detector 1, which is not in surveillance mode, is placed on the gate 4 of the fence, and even in the case that the gate is moving in a normal operating mode during its opening or closing. A tampering of the RFID acceleration detector 1 means removing the RFID acceleration detector 1 from the gate 4, removing or damaging of a part of the gate 4 on which the RFID acceleration detector 1 was located. If the gate 4 is linear, the characteristic direction of the RFID acceleration detector 1 movement is, during the gate 4 opening or closing, consistent with the direction of the movement in the axis 13. The RFID acceleration detector 1 does not move in a normal operating condition in the axis 12. The axis 12 is perpendicular to the axis 13 and 11. As a result of tampering of the RFID acceleration detector, 1 the RFID acceleration detector 1 always moves in the axis 12, and thus the system can distinguish tampering with the RFID acceleration detector 1 on the linear gate 4 from the normal operating conditions.

[0011] In case of a swinging gate 4 (open by rotation), the RFID acceleration detector 1, when opening or closing this gate 4 always moves in one plane, perpendicular to the axis of rotation of the gate, and the RFID acceleration detector 1 is not in motion in the axis 12, which is perpendicular to this plane. The RFID acceleration detector 1 always moves in the axis 12 as a result of tampering with the RFID acceleration detector 1, and thus the system can distinguish tampering with the RFID acceleration detector 1 on the swinging gate 4 from the normal operating condition.

[0012] About whether this is a tampering with RFID acceleration detector 1 caused by an intruder 10 is decided directly by the RFID acceleration detector 1 or the evaluation unit 6 according to the setting.

[0013] The system is able to detect the quality of patrolling work 17 carried out by guards 15 patrolling the entire perimeter. In the event that the security guard 15 moves within the adjustable range of the RFID acceleration detector 1 during performance of patrolling activities 17, with his/her RFID tag 16, placed on individual sections of the fence 3 or the gate 4, the fact is analyzed in the RFID acceleration detector 1, the RFID tag 16, or the evaluation unit 6 as a performed act, including time information. This makes it possible to check the patrolling activities using RFID acceleration detectors 1, installed around the entire lot perimeter. The guard 15 is not required to manipulate his/her RFID tag 16 in any way.

Example 2

[0014] According to Example 2, the invention is constructed so that a RFID acceleration detector 1 detects whether an intruder 10 climbs over a fence section 3 or a gate 4 based on the readings of mechanical vibrations on the fence section 3 or the gate 4 constructions in a location of this incident. The RFID acceleration detector 1 is able to evaluate the vibrations and send this information via the communication channel 5 to a retransmitting unit 8, which sends this information via communication channel 9 to a neighboring retransmitting unit 8, or evaluation unit 6, if within reach. The system is able to distinguish between climbing over the fence section 3 or the gate 4 by an intruder (intruder incident) and the atmospheric disturbances such as wind, hail, rain, seismic shocks, shock waves caused by the passing cars near the fence, etc. due to the fact that these environmental effects affect all RFID acceleration detectors 1 located on the perimeter simultaneously. When the intruder 10 climbs over the perimeter, movement of the RFID acceleration detector 1 is in the area perpendicular to the axis 11 of a fence section 3 or a gate 4 in the location of the incident significantly bigger than movement of RFID acceleration detectors 1 in the axis 11 perpendicular to the surface of fence section 3 in the place where there is no disturbance by the intruder 10. The system is immune to the environmental effects that would otherwise cause false alarms by the fact that the movements of RFID acceleration detectors 1 in the axis 12 perpendicular to the surface of fence sections 3 are approximately identical, because these environments affect the entire length of the perimeter simultaneously.

[0015] The system is able to detect tampering with the RFID acceleration detector 1 located on a fence section 3 or a gate 4 caused by an intruder 10. The RFID acceleration detector 1 tampering means removing the RFID acceleration detector 1 from a fence section 3 or a gate 4, or removing or damaging a part of the fence section 3 or the gate 4, on which the RFID acceleration detector 1 was located. There are two axes 12 and 13 on individual sections of the fence 3 or the gate 4, which are perpendicular to the axis 11, in which the RFID acceleration detector 1 is in motion during the intruder 10 attempt to climb over the section 3 of the fence or the gate 4, in which the RFID acceleration detector 1 is not moving. The RFID acceleration detector 1 in the axes 12, 13 is due to the tampering in motion, and due to this, the system is able to distinguish tampering of the RFID acceleration detector 1 on a fence section 3 or a gate 4 from the normal operating conditions. The decision on whether the tampering caused by the intruder 10 is a matter of concern is provided directly by the RFID acceleration detector 1, the retransmitting unit 8, or evaluation unit 6 according to the system setting.

[0016] The system is able to detect a tampering with the RFID acceleration detector 1 by an intruder 10 even in the case that the RFID acceleration detector 1, which is not in surveillance mode, is placed on the gate 4 of the fence, and even in the case that the gate is moving in a normal operating mode during its opening or closing. A tampering with the RFID acceleration detector 1 means removing the RFID acceleration detector 1 from the gate 4, removing or damaging of a part of the gate 4, on which the RFID acceleration detector 1 was located. If the gate 4 is linear the characteristic direction of the RFID acceleration detector 1 movement is, during the gate 4 opening or closing, consistent with the direction of the movement in the axis 13. The RFID acceleration detector 1 does not move in a normal operating condition in the axis 12. The axis 12 is perpendicular to the axis 13 and 11. As a result of tamper of the RFID acceleration detector 1 the RFID acceleration detector 1 always moves in the axis 12, and thus the system can distinguish tampering with the RFID acceleration detector 1 on the linear gate 4 from the normal operating condition.

[0017] In case of a swinging gate 4 (open by rotation), the RFID acceleration detector 1 when opening or closing this gate 4, always moves in one plane, perpendicular to the axis of rotation of the gate, and the RFID acceleration detector 1 is not in motion in the axis 12 which is perpendicular to this plane. The RFID acceleration detector 1 always moves in the axis 12 as a result of tampering with the RFID acceleration detector 1, and thus the system can distinguish tampering with the RFID acceleration detector 1 on the swinging gate 4 from the normal operating conditions.

[0018] About whether this is a tampering with RFID acceleration detector 1 caused by an intruder 10 is decided directly by the RFID acceleration detector 1, the retransmitting unit 8, or the evaluation unit 6 according to the setting.

[0019] The system is able to detect the quality of patrolling work 17 carried out by guards 15 patrolling the whole perimeter. In the event that the security guard 15 moves within the adjustable range of the RFID acceleration detector 1 during performance of patrolling activities 17, with his/her RFID tag 16, placed on individual sections of the fence 3 or the gate 4, the fact is analyzed in the RFID acceleration detector 1, the RFID tag 16, or the evaluation unit 6 as a performed act, including time information. This makes it possible to check the patrolling activities using RFID acceleration detectors 1, installed around the entire lot perimeter. The guard 15 is not required to manipulate his/her RFID tag 16 in any way.

Example 3

[0020] According to Example 3, the invention is constructed so that a RFID acceleration detector 1 detects whether an intruder 10 climbs over a fence section 3 or a gate 4 based on the readings of mechanical vibrations of the construction of a fence section 3 or a gate 4 in a location of this incident. The RFID acceleration detector 1 is able to evaluate the vibrations and send this information via the communication channel 5 to a neighboring

RFID acceleration detector 1, or an evaluation unit 6 if within reach. The system is able to distinguish between the intruder incident (climbing over the fence) at the fence section 3 or the gate 4 and the environmental effects such as wind, hail, rain, seismic shocks, shock waves from the passing cars near the fence, etc. by affecting all the RFID acceleration detectors 1 located at the perimeter simultaneously. When the intruder 10 climbs over the perimeter movement of the RFID acceleration detector 1 is in the area perpendicular to the axis 11 of a fence section 3 or a gate 4 in the location of the incident significantly bigger than the movement of RFID acceleration detectors 1 in the axis 11 perpendicular to the surface of fence section 3 in the place where there is no disturbance by the intruder 10. The system is immune to the environmental effects that would otherwise cause false alarms by the fact that the movements of RFID acceleration detectors 1 in the axis 12 perpendicular to the surface of fence sections 3 are approximately identical in all fence sections 3, because these environmental effects affect the entire length of the perimeter simultaneously.

[0021] The system is able to detect tampering with the RFID acceleration detector 1 located on a fence section 3 or a gate 4 caused by an intruder 10. The RFID acceleration detector 1 tampering means removing the RFID acceleration detector 1 from a fence section 3 or a gate 4, or removing or damaging a part of the fence section 3 or the gate 4, on which the RFID acceleration detector 1 was located. There are two axes 12 and 13 on individual sections of the fence 3 or the gate 4, which are perpendicular to the axis 11, in which the RFID acceleration detector 1 is in motion during the intruder 10 attempt to climb over the section 3 of the fence or the gate 4, in which the RFID acceleration detector 1 is not moving. The RFID acceleration detector 1 in the axes 12, 13 is due to the tamper in motion, and due to this, the system is able to distinguish tampering with the RFID acceleration detector 1 on a fence section 3 or a gate 4 from the normal operating conditions. The decision on whether the tampering caused by the intruder 10 a matter of concern is provided directly by the RFID acceleration detector 1, the retransmitting unit 8, or evaluation unit 6 according to the system setting.

[0022] The system is able to detect a tampering with the RFID acceleration detector 1 by an intruder 10 even in the case that the RFID acceleration detector 1, which is not in surveillance mode, is placed on the gate 4 of the fence, even in the case that the gate is moving in a normal operating mode during its opening or closing. A tampering of the RFID acceleration tag 1 means removing the RFID acceleration detector 1 from the gate 4, removing or damaging of a part of the gate 4, on which the RFID acceleration detector 1 was located. If the gate 4 is linear the characteristic direction of the RFID acceleration detector 1 movement is, during the gate 4 opening or closing, consistent with the direction of the movement in the axis 13. The RFID acceleration detector 1 does not move in a normal operating condition in the axis 12. The axis 12 is perpendicular to the axis 13 and 11. As a result of tampering with the RFID acceleration detector 1 the RFID detector 1 always moves in the axis 12, and thus the system can distinguish tampering with the RFID acceleration detector 1 on the linear gate 4 from the normal operating conditions.

[0023] In case of a swinging gate 4 (open by rotation), the RFID acceleration detector 1 when opening or closing this gate 4, always moves in one plane, perpendicular to the axis of rotation of the gate, and the RFID acceleration detector 1 is not in motion in the axis 12, which is perpendicular to this plane. The RFID acceleration detector 1 always moves in the axis 12 as a result of tampering with the RFID acceleration detector 1, and thus the system can distinguish tampering with the RFID acceleration detector 1 on the swinging gate 4 from the normal operating conditions.

[0024] About whether this is a tampering with RFID acceleration detector 1 caused by an intruder 10 is decided directly by the RFID acceleration detector 1, the retransmitting unit 8, or the evaluation unit 6 according to the setting.

[0025] The system is able to detect the quality of patrolling work 17 carried out by guards 15 patrolling the whole perimeter. In the event that the security guard 15 moves within the adjustable range of the RFID acceleration detector 1 during performance of patrolling activities 17, with his/her RFID tag 16, placed on individual sections of the fence 3 or the gate 4, the fact is analyzed in the RFID acceleration detector 1, the RFID tag 16, or the evaluation unit 6 as a performed act, including time information. This makes it possible to check the patrolling activities using RFID acceleration detectors 1, installed around the entire lot perimeter. The guard 15 is not required to manipulate his/her RFID tag 16 in any way.

Industrial Utilization

[0026] The method of perimeter surveillance using RFID acceleration detectors_can be utilized primarily in the surveillance of fences and gates as well as the guards patrol checks.

Claims

1. The method of the perimeter surveillance using RFID acceleration detectors is **characterized by** the fact that the RFID acceleration detectors (1), capable of detection of crossing over the perimeter by an intruder (10) are placed on individual sections (3) of the fence or the gate (4), where movement of the RFID acceleration detector (1) in the axis (11) perpendicular to the area of the section (3) of the fence or the gate (4) in a location of the incident during a violation of the perimeter by the intruder (10) is significantly bigger than movements of acceleration detectors (1) in the axis (11) perpendicular to the area of the fence

sections (3) in places where there is no disturbance caused by the intruder (10). The RFID acceleration detectors are able to detect all the environmental effects that would otherwise cause a false alarm by the fact that movements of the RFID acceleration detectors (1) in the axis (11) perpendicular to the area of the section (3) of the fence are approximately identical in all sections (3) of the fence. Furthermore, the RFID acceleration detectors are able to detect an attempt to tamper with the RFID acceleration detector (1) by the intruder (10) located on the section (3) of the fence or gate (4) where the RFID acceleration detector (1), while carrying out tampering with it, is in motion in the axis (12) in contrast to normal operating conditions. Also, the RFID acceleration detectors are able to detect the quality of patrolling activities (17) carried out by the guards (15) around the entire perimeter where, in the event that the guard (15) during his/her patrol activities (17) moves close, within an adjustable range, with his/her RFID tag, (16) to the RFID acceleration detector (1) placed on each section (3) of the fence or gate (4), the fact is analyzed in the RFID acceleration detector (1) or RFID tag (16) or the evaluation unit (6) or retransmitting unit (8) as a performed act, including time information.

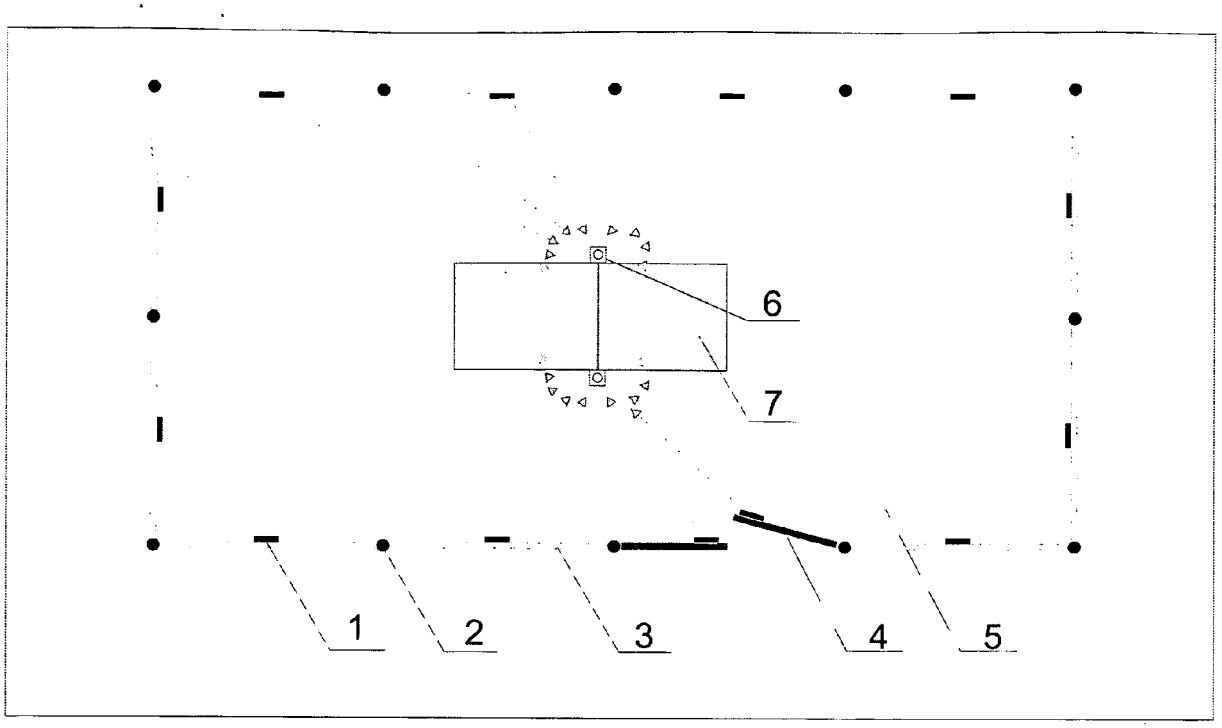

Fig. 1

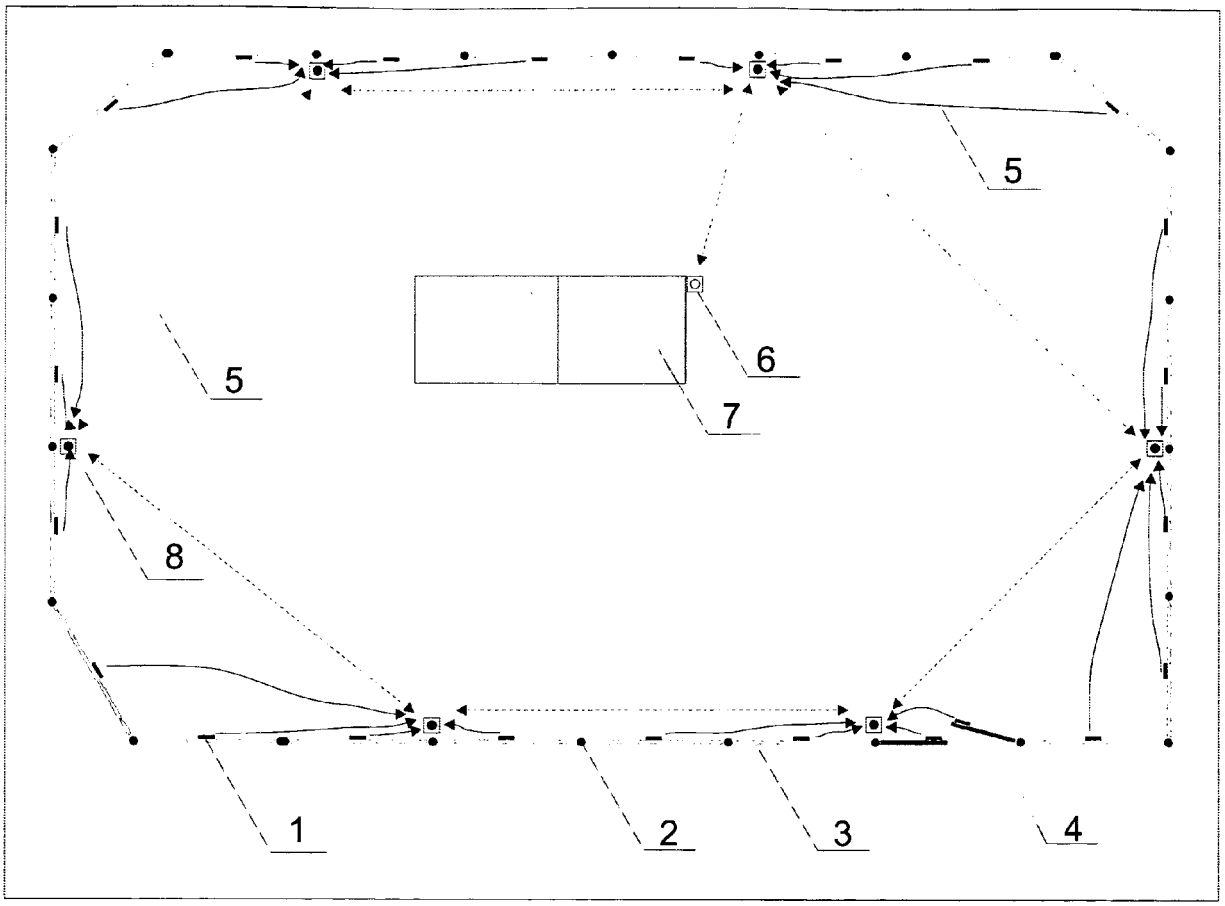

Fig. 2

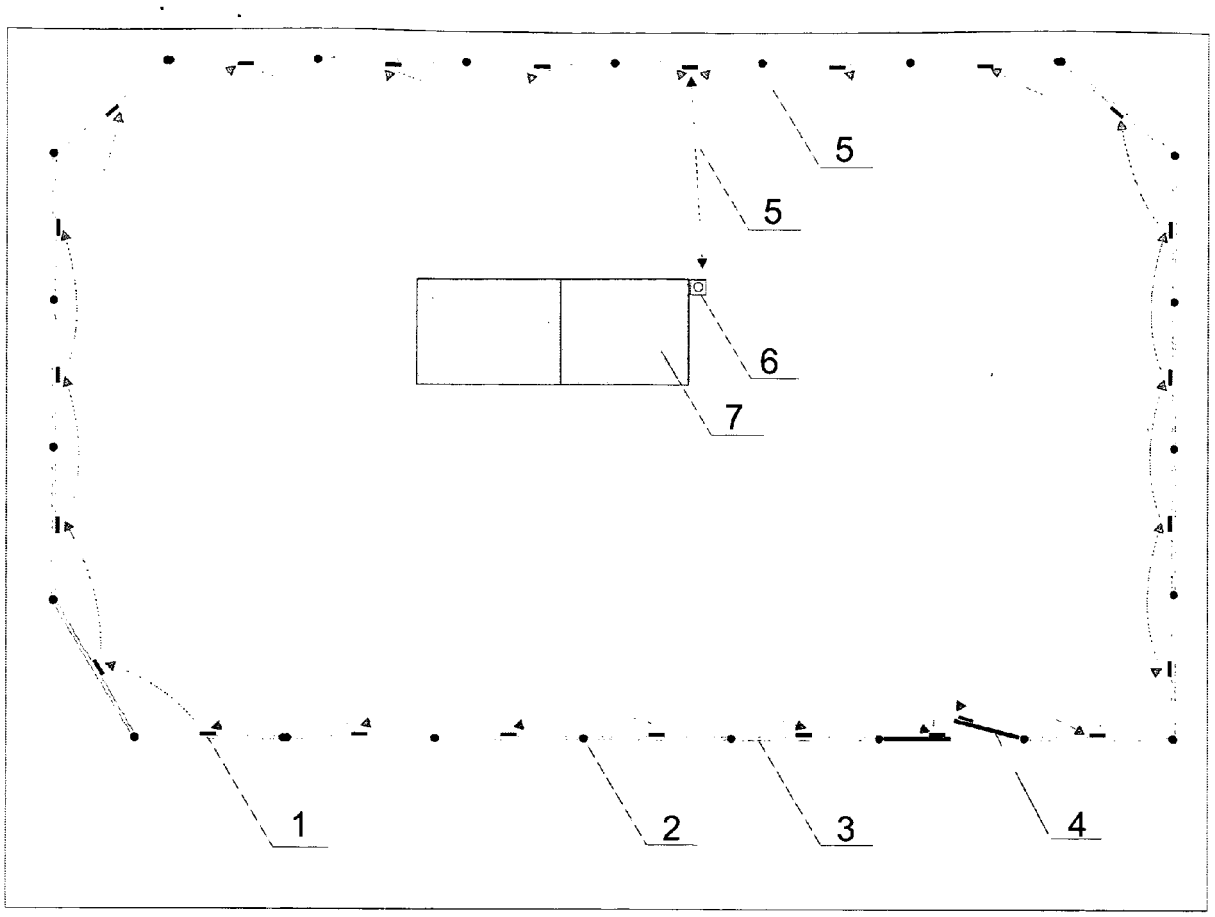

Fig. 3

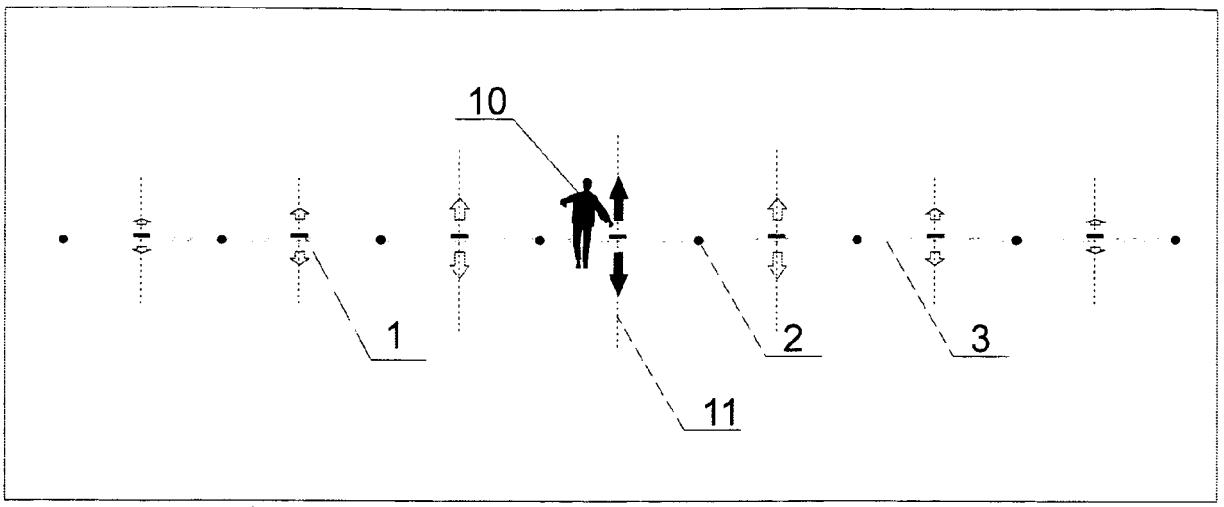

Fig. 4

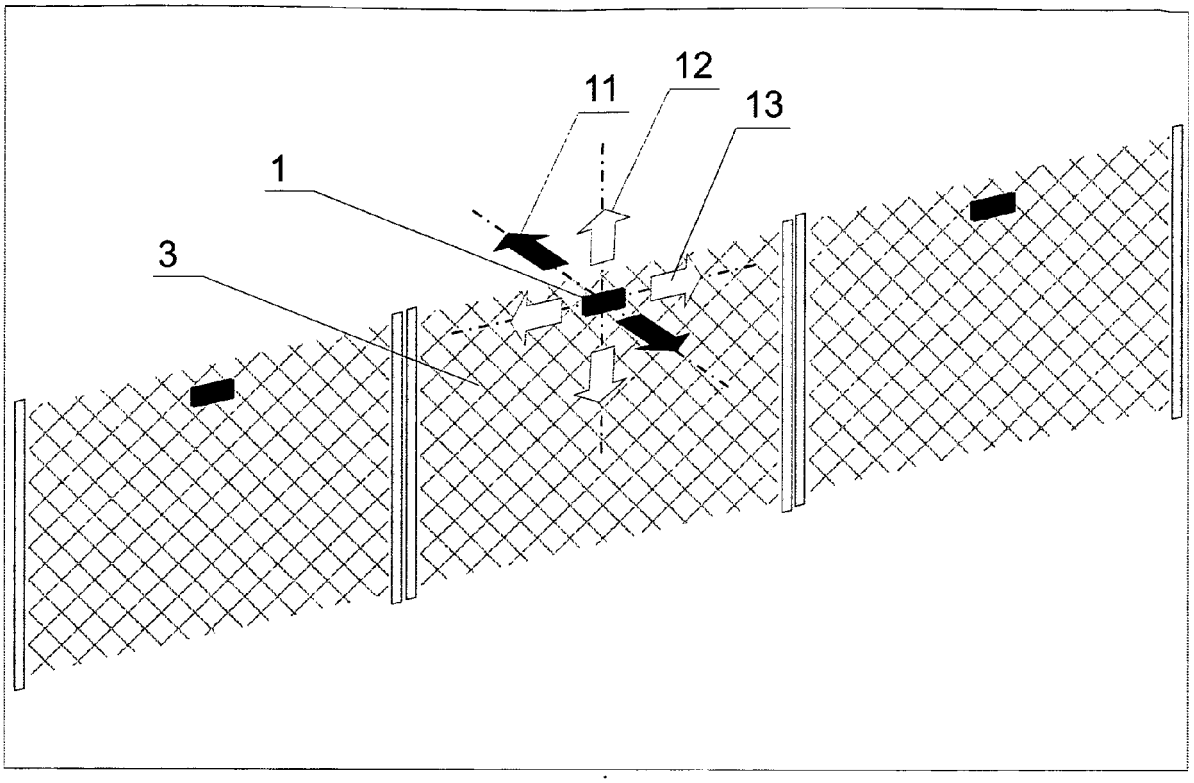

Fig. 5

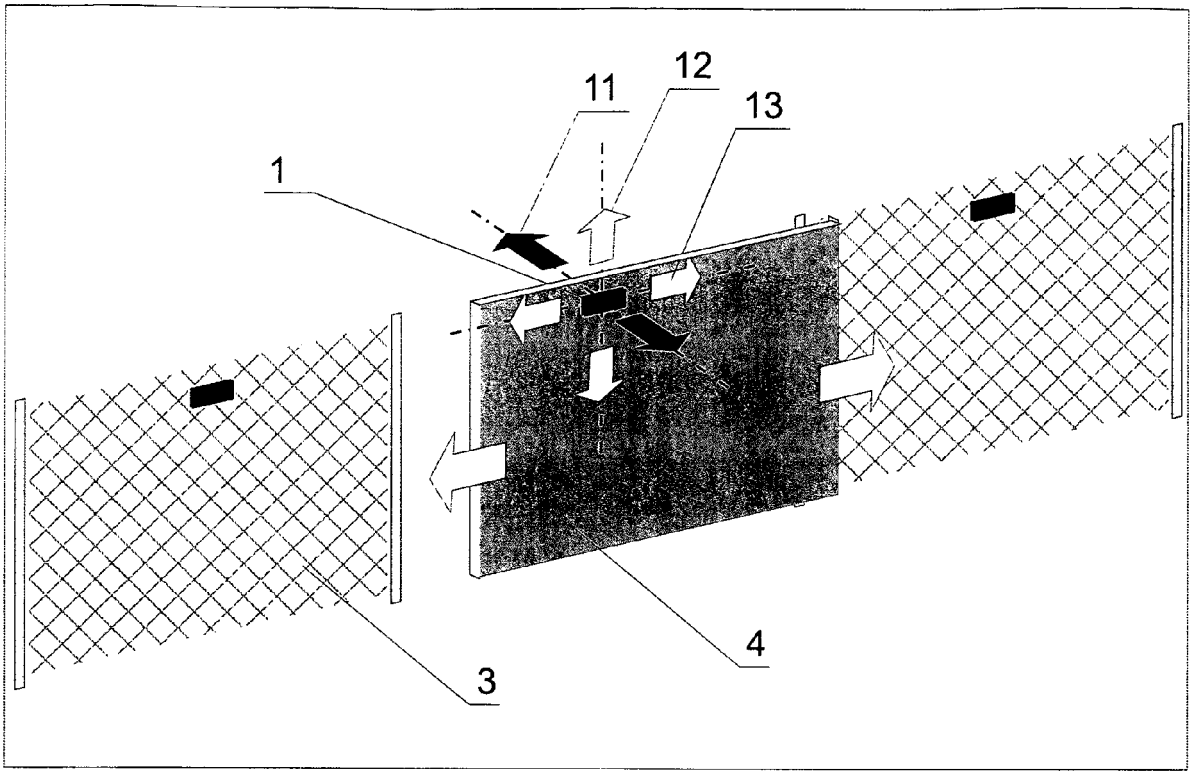

Fig. 6

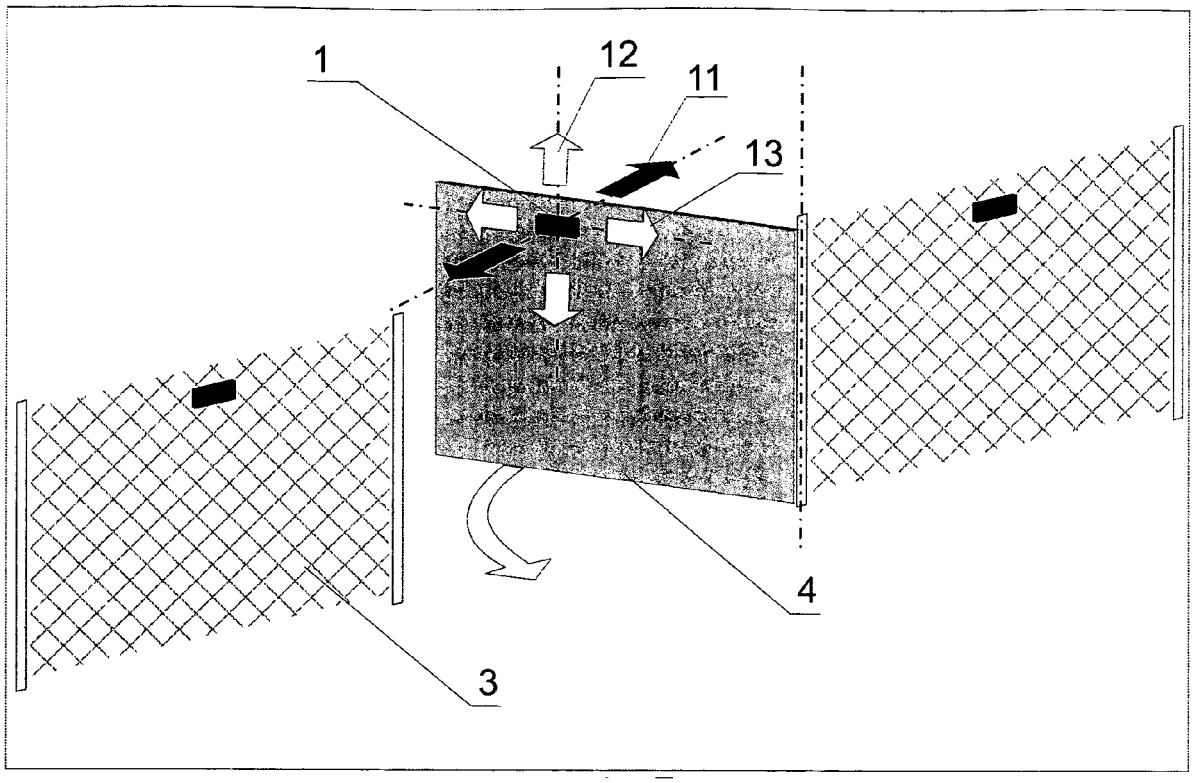

Fig. 7

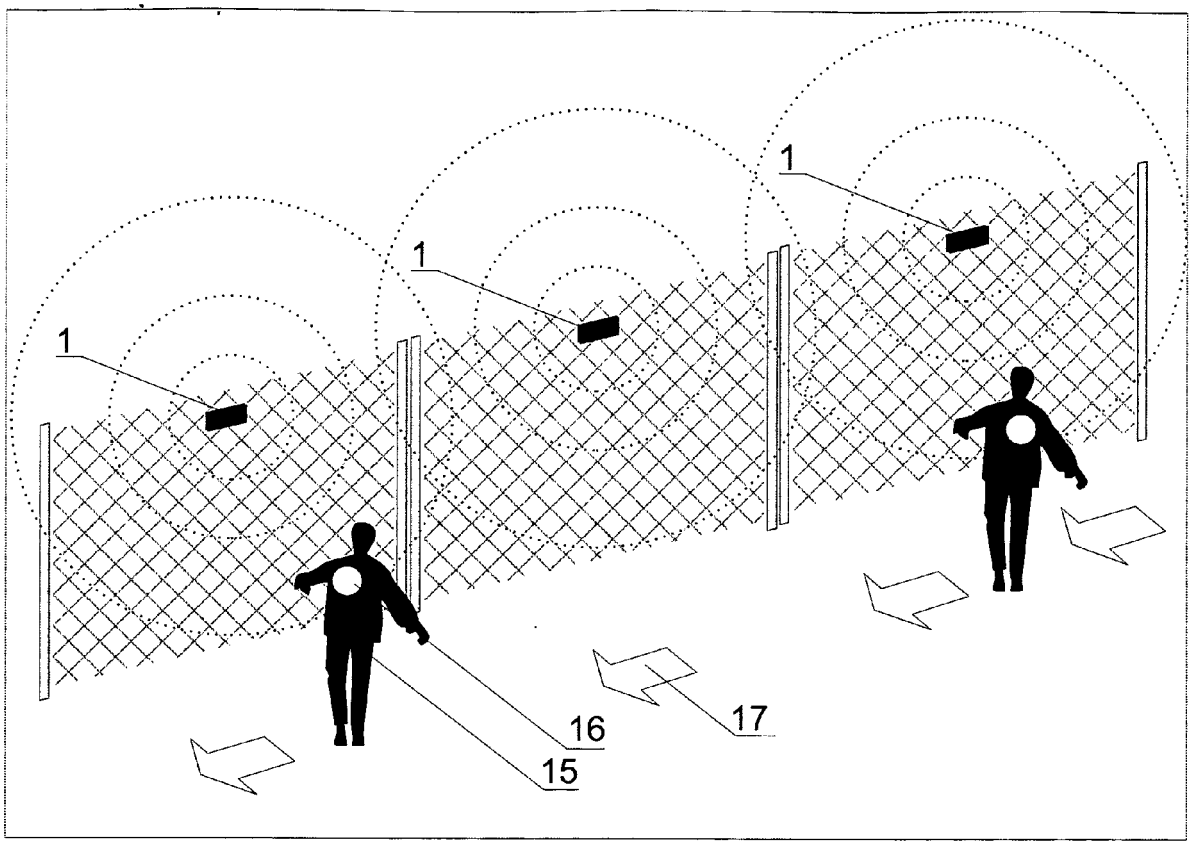

Fig. 8