

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
10 December 2009 (10.12.2009)

PCT

(10) International Publication Number
WO 2009/147663 A2

(51) International Patent Classification:
G08C 25/02 (2006.01)

(21) International Application Number:
PCT/IL2009/000543

(22) International Filing Date:
1 June 2009 (01.06.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
191975 5 June 2008 (05.06.2008) IL
191976 5 June 2008 (05.06.2008) IL

(71) Applicant and

(72) Inventor: **HESSEL, Lior** [IL/IL]; 14 George Landauer
Street, 27033 Kiryat Bialik (IL).

(74) Agents: **LUZZATTO & LUZZATTO** et al.; P.O. Box
5352, 84152 Beer Sheva (IL).

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,

CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ,
EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO,
NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG,
SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every
kind of regional protection available*): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ,
TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR),
OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML,
MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished
upon receipt of that report (Rule 48.2(g))*

(54) Title: FAST RESPONSE MOBILE SYSTEMS AND APPARATUS

(57) Abstract: A surveillance system comprises an autonomous vehicle or pod provided with one or more sensors suitable to acquire data representative of a monitored area, said sensors being coupled with comparison means capable of comparing data acquired by said one or more sensors at the same location and at different times and to generate a signal indicative of a change in said data when two or more consecutive data sets are such that a difference can be determined. Optional active response means are provided, which are suitable to respond to a threat.



WO 2009/147663 A2

FAST RESPONSE MOBILE SYSTEM AND APPARATUS

Field of Invention

The present invention relates in general to a surveillance system. In particular, the present invention relates to a fast response surveillance system for detecting, evaluating and responding to forbidden activity that takes place along and around a predetermined path, which is also capable of actively responding to such forbidden activities and to threats posed thereby. More particularly, the invention relates to an autonomous pod, capable of carrying various payloads and traveling at high speeds along a dual-cable railing or other supporting elements, wherein such payloads may include active response systems.

Background of the Invention

When trying to prevent a potential intruder from entering a restricted area undetected, a physical barrier, such as a wall or barbed wire fence is often not enough of a deterrent. A determined intruder may find a way to bypass the barrier and enter the area before the intrusion is noticed or detected. Because of this problem, manned surveillance is often necessary. However, patrols and other manned means of surveillance are effective for localized surveillance but are not a practical solution when long perimeters are involved.

Surveillance is needed in a variety of environments, such as for secured areas and border integrity, law enforcement along roads and highways, monitoring of state infrastructures such as power plants, other strategic sites, the national power grid, national water supply grid, and the like.

Attempts have been made in prior art to provide unmanned surveillance systems and methods, particularly with reference to remote monitoring using remote video cameras. WO 2007/004217A discloses a surveillance camera that is connected to a mobile platform that travels along a predetermined path at irregular time intervals. However, the data processing, platform movement, and field of view have to be controlled at all times from a remote control center. Also, since this proposed methods employs video cameras as its only means of detection, visibility may become an issue where low light conditions, fog or night-time are concerned. Furthermore, some applications require other surveillance methods such as motion detection, sonar or radar.

Other surveillance methods include providing a drone, such as that disclosed in US 5,035,382, which is remotely controlled, and comprises a camera and data transmission means. However, a drone requires additional, costly and heavy control systems, and therefore its use involves

high costs unsuitable for securing the perimeter of, e.g., a town. This, of course, in addition to other problems and limitations which are inherent to drones, with respect to the time that can be spent in flight, and the high cost of refueling, maintenance, etc.

Stationary surveillance cameras have also been widely used in the art to cover overlapping areas. However, for long perimeters it is practically impossible to provide a sufficient number of cameras to efficiently cover all possible intrusion routes. Motorized or pedestrian patrolling systems and methods prove ineffective, since the intruder must merely wait until he is out of view of the patrol, before attempting an undetected entry to the area.

Another area where surveillance is useful is law enforcement. For instance, in monitoring traffic violations along roads and highways. Usual means of monitoring and enforcement include policemen manned with radars, situated on the roadsides, stationary traffic cameras, and civilian cars with on-board hidden surveillance means. This is beside deterrence means such as police patrol cars, cruising the roads and dummy camera poles.

- 4 -

In many cases, more dummies get installed along roads and highways than working cameras. However, these are easily singled out by viewing internet sites that publish such information or subscribing to mobile phone services which alert the subscriber to the near presence of radar traps and active cameras.

However, traffic cameras, dummy cameras and patrol units have a very localized deterrence radius, i.e., their visibility radius. This leaves most of the road mileage unmonitored for most of the time. Other conventional monitoring means have proven equally inefficient and are not discussed herein in detail, for the sake of brevity.

Another area in which long lines must be secured include pipe or duct grids that transport materials such as drinking water, petrol or the like around the country.

US 5,225,863 discloses a remotely operated camera system that is mounted on a motorized carriage, which is suspended from a suspension cable. The carriage is driven by a series of pulleys, which thereby drives the camera along the suspension cable. The elevated camera avoids the difficulties associated with land vehicle patrols. However, an intruder may bypass the camera in a similar manner, by remaining in hiding until he is

not in the camera's field of view. Moreover, prior art surveillance systems are not provided with efficient response means, which can actively deal with a threat discovered in a controlled area, thus minimizing and in some cases even obviating the need for live personnel to take specific action that may endanger them.

There is therefore a need for an efficient and low-cost system that obviates the disadvantages of the prior art and allows for efficient surveillance of long perimeters or lines.

It is therefore an object of the present invention to provide a system that overcomes the deficiencies of prior art systems and allows to monitor areas to which unauthorized entry is to be detected and prevented.

It is another object of the present invention to provide a system that overcomes the deficiencies of prior art systems and allows to monitor areas and to take effective, unmanned, active action, if desired, when unauthorized entry or other threat is to be detected and, in some cases, prevented.

It is a further object of the invention to provide methods for efficiently operating such a system in different environments.

Further purposes and advantages of this invention will appear as the description proceeds.

Summary of the Invention

In one aspect the invention relates to a surveillance system, comprising an autonomous vehicle (hereinafter referred to also as "pod") provided with one or more sensors suitable to acquire data representative of a monitored area, said sensors being coupled with comparison means capable of comparing data acquired by said one or more sensors at the same location and at different times and to generate a signal indicative of a change in said data when two or more consecutive data sets are such that a difference can be determined.

Illustrative and non-limitative examples of suitable sensors include those selected from among stills cameras, video cameras, thermal cameras, radars and the like imaging equipment. Preferably the pod is provided with an electric motor, although other means of propulsion can be employed. Additional auxiliary means, such as solar energy cells can be used to store energy used to operate the pod and its equipment.

According to one embodiment of the invention the pod is equipped with location means, such as GPS apparatus. In one embodiment of the invention, in addition to data transfer means the pod is also provided with communication means.

In another aspect the invention relates to an active response system, comprising an autonomous vehicle or pod provided with one or more active response means capable of responding to a threat, danger or other situation considered anomalous under the operating conditions of the system, said active response being generated automatically or by manned remote control.

The active response means may comprise a weapon, which can be optionally operated by a distant operator. In another example the active response means comprise automatically-actuated response means, which can be of any suitable means. Illustrative examples include sound-generating apparatus, liquid or gas dispensing apparatus, and any other active means that are suitable to address the specific threat or situation.

In a further aspect the invention also provides a method for securing a perimeter, comprising causing an autonomous vehicle to travel along said perimeter and above ground level at high speed, while traveling to acquire

data representative of the status of a designated area and to compare data relative to a specific location with data acquired during a previous passage, and to generate a signal indicative of a change having taken place at said location if a difference is detected between data acquired at the same location but at different times.

In yet another aspect the invention also provides a method for actively securing a perimeter, comprising causing an autonomous vehicle to travel along said perimeter and above ground level at high speed, and to actively respond to a threat, danger or other situation considered anomalous under the operating conditions of the system, said active response being generated automatically or by manned remote control.

In some cases the active response can be primed by an alarm situation generated by a static perimeter-securing system, and then the method comprises receiving an alarm signal from said static perimeter-securing system and responding to it by directing an unmanned pod to the relevant location and operating the equipment borne on said pod in a manner actively responsive to the alarm signal or to the reason for it.

Further encompassed by the invention is a method for passively or actively responding to an alarm situation generated by a static perimeter-

securing system, comprising receiving an alarm signal from said static perimeter-securing system and responding to it by directing an unmanned pod to the relevant location and operating the equipment borne on said pod in a manner responsive to the alarm signal or to the reason for it. One illustrative example of a static perimeter-securing system is an electronic fence.

The pod can travel at different speeds, depending on the task involved, the type of equipment, the available power, etc. Illustrative travel speeds are in the range between a few kilometers and 120 kilometers per hour.

Brief Description of the Figures

The above and other characteristics and advantages of the invention will be better understood through the following illustrative and non-limitative detailed description of embodiments thereof, with reference to the appended drawings, wherein:

- Fig. 1 schematically shows a perimeter to be secured;
- Fig. 2 is a schematic representation of a segment of the perimeter with an autonomous pod shown, also schematically;

- Fig. 3 is a schematic top view of a pod according to one embodiment of the invention, showing the various elements of an illustrative pod.

- Fig. 4 is a diagram illustrating an exemplary Data Flow.

Detailed Description of The Invention

Generally speaking, the present invention relates to a surveillance system for detecting and, optionally, actively responding to forbidden movement or other threat in any direction at one or more locations along a patrolled route. At the heart of the surveillance system is an unmanned vehicle, referred to herein as “pod”, it being understood that this generic word is used for simplicity and may refer to a variety of very different devices.

The pod may be propelled by a gasoline motor, an electric motor, wherein the electricity is conducted to the motor through the cable line or rail or by an on-board battery that operates an electrical motor, which optionally can be recharged by a solar power generator or by a dynamo. For practical purposes electric power is preferred for most uses, but of course any alternative power source can be employed.

The pod is movable along a cable or rail suspension or the like system, e.g., by a system of wheel members pairs of wheels with spring racks operate together to grab the cable, thus preventing the disconnection of the pod from the cable when high G forces develop during high speed curves in the horizontal or vertical planes. This allows for high friction between the wheels and the cable and enables fast acceleration and deceleration.

Looking now at Fig. 1, a building A is enclosed within a perimeter bounded by a fence. According to the invention it is possible to divide the perimeter in as many segments as desired, and even in one single segment. The number of segments chosen will depend on the importance of the location and the trade-off between the level of security achieved and the cost of the system. In the example shown in Fig. 1 the perimeter has been divided into five segments, by the establishment of base stations 1 through 5.

Each segment is served by one pod, which moves between two adjacent base stations. Thus, for instance, one of the pods will move back and forth between base stations 1 and 2, while another one will do the same between base stations 4 and 5. It should be noted that the speed at which each pod travels in its assigned segment may be different because, according to this particular arrangement, each is independent of the other.

In an alternative embodiment of the invention a pod may travel along more than one segment, or even all of them may travel along the whole segment, either unidirectionally or back and forth. This is achieved according to the invention because of the great flexibility allowed by the system, which is controlled by computerized means and appropriate software, not described in detail for the sake of brevity.

A segment of the perimeter is schematically shown in Fig. 2, which shows a pod 10 moving along a line consisting of two cables, or rails (depending on the type of motive system and location), 11 and 11', which are located above ground level and sustained by suitable poles 12.

According to the invention the pod is provided with at least one, but possibly more, active response means. These may include, for instance, weapons, which can be operated by a distant operator, or even automatically-actuated response means, such as sirens, loudspeakers and the like, which, for instance, can be useful to scare away animals that should not be allowed to penetrate a certain perimeter. The pod may also be provided with a plurality of sensing elements, which are suitable to acquire data representative of an area being surveyed, wherein said data is indicative of a change having taken place at a particular location as

compared with a previous data acquisition. Illustrative examples of suitable sensing elements include conventional cameras, thermal cameras, radars, and the like equipment. Thus, for instance, if characteristic data is acquired, which indicates that a wolf is attempting to enter a forbidden area in which livestock is kept, the pod may attempt to scare it away automatically, by actuating a siren or other noise, or other means can be actuated by an operator. For instance, a weapon can be fired at the wolf with intent to kill, or liquid or gas can be sprayed to put it to sleep or frighten it.

As will be apparent to the skilled person, the actual nature of the active response means is not critical, and suitable systems can be provided for specific terrains, expected threats and tasks.

In addition to the sensing equipment the pod is also provided with auxiliary systems, such as GPS, to determine its instantaneous location, a communication apparatus to transmit data to a manned or unmanned station, and additional equipment, such as a loudspeaker to allow an operator to communicate with a person near the pod, for instance when stopping a car who is in violation of traffic regulations on a highway. Furthermore, the pod is equipped with processing means, such as a CPU

and related hardware, to manipulate, analyze and transmits data to a remote station.

The pod is of course provided with propulsion means, typically an electric motor that receives power from a power line that may be incorporated in the sustaining cable or rail, or maybe coupled to them. Preferably, but not limitatively, the pod is also provided with a battery that can allow it to function during power line outage and, optionally, with a solar cell system that can be used as a source of alternative or additional power.

An illustrative scheme of a pod, according to one particular embodiment of the invention, is shown in Fig. 3. The pod 30 comprises an electric motor 31, controlled by motion controller 32, which in turn is controlled by CPU 33. The equipment head 34 contains detection equipment 35 (only one schematic part being indicated by numeral 35 in the figure). Raw data generated by equipment 35 is sent through line 36 to the CPU, which sends processed data (37) to the central modulation system CMS, which is also in connection with the equipment controller 38. Processed, modulated data (39) is sent from the CMS to access point 40 (e.g., via RF or cable), from which it is sent through communication line 41 to remote central processor 42.

- 15 -

To illustrate in the operation of the system of the invention in one of its simplest modes, reference is again made to Fig. 2. The body shown in dotted lines with numeral 13 indicates an intruder. Intruder 13 was not on his present spot during the previous passage of pod 10, but you and the current passage the pod's sensing means detect a change brought about by his presence. For instance, if images of the area are taken, comparing two images taken at the same exact location at two subsequent different times and analyzed by image analysis known in the art will show that a difference exists. The existence of a difference is sufficient to initiate further investigation which may include scanning the area with additional sensors, requesting an intervention of human personnel, either on the spot or to supervise such further investigation from a remote location, or any other activity that has been pre-defined for such a situation. Alternatively, communication can be established with a person at the perimeter via a loudspeaker-microphone system provided on the pod, or other defensive active action can be taken, depending on the type of equipment provided on the pod.

As will be appreciated by the skilled person, because only a differential analysis of data collected by sensing means is performed, according to this particular embodiment of the invention, at the pod, the amount of data transmitted to the base station or to any other remote location is very

- 16 -

limited and that therefore no heavy or expensive communication apparatus is needed. Transmission of data can be affected using chose to the cable or the power line as a communication line, or, for instance, by short-range RF transmission effected at selected poles.

However, the pod can be utilized even if no detection is carried out by it. So, for instance, the pod can be used to actively respond to a potential threat that has been identified by other, unrelated systems, such as an electronic fence.

Turning now to the equipment provided in the pod, there is no limitation to the kind of devices that can be used, as long as the pod can carry and bear them. Illustrative examples of suitable sensors include:

- 1) Heat sensors for the thermal imaging and detection of thermal changes of landscape, ground and static objects. These will reflect the passing of a vehicle even if the vehicle has already exited from the scanned aria.

- 2) Sonar – sound and ultra sound waves detection with signal processing software that can interpret signals characteristic of specific entities, and a learning neuron net system with IFF – Identification, Friend or Foe.

3) Radar – different wavelets and different amplitudes can be used implementing the Doppler effect to spot and identify objects. Comparing reflections of the same sent signals from the same positions can indicate changes of the scanned area and suggest an intrusion.

4) Imaging – image processing black and white, color, UV or IR pictures.

The data and control commands flow in the system, according to one specific embodiment of the invention, is schematically described below.

Illustrative examples of suitable active response means include:

- 1) Weapons;
- 2) Noise generators;
- 3) Loudspeakers;
- 4) Gas emitters;
- 5) Liquid sprayers.

According to the invention part of the data processing is performed on the pod and processed data is transferred over the grid. The processed data is significantly smaller in volume and can be transferred faster or alternatively on a narrower band. Thus, it is possible to carry out this process without reducing the quality of the information transferred. In a

particular example, the signal functions are derived in time or in position, once or several times. Statistic functions of the signal are also derived in a similar manner. Mathematical manipulations are performed on the data using calculus or on the statistic data base saved in the on board memory using numerical analysis.

A neuron net-based system is embedded to enable the pod to learn the characteristics of each position of the path and to enable the system to report only on changes over time or in position of objects.

An exemplary Data Flow will be described with reference to Fig. 4:

- Signals (raw data) from the equipment head flows to the on-board CPU.

On the CPU the data processing is performed.;

- From the CPU the processed data flows to the CMS - Central modulation system;

- From the CMS the modulated data flows through the cables to the access point.

- From the access point the data flows through an optic cable to the central control.

Control commands flow:

- Control commands flows to and from the central control to and from the pod's equipment head and motion controller via the same root as the data;

- 19 -

- The control command is also be able to be transmitted directly to the central control by wireless transmission through wireless access points located along the road and connected to the central control by the same optic cable;
- Certain signals, such as alarm signals or detection indication signals from the CPU, after the CPU deemed the situation to be such, are transmitted with the control commands and can also be transmitted directly to the central control by wireless transmission .

Data processing and event detection.

Mode A:

The system's pods collect signals from all the pod sensors. This is a very large amount of data. Some of the data has to be converted from analog to digital before being stored on the on board memory;

- The motion controller reports to the CPU the pod's position at all times and the CPU stores this data with the rest of the data stored;

The on-board processing of the data takes place all the time simultaneously with the continued data collection;

- The processing includes comparing current signals with signals from former perambulations and/or from different locations, depending on the signal type;

- 20 -

- The processing includes derivations and other mathematical and statistical actions. Processed data are stored on the on board memory;
- Some sensors work at high speeds in mode A.
- Any change in the normal cause of action. $dF/dt > Th$. Th – being the allowed change results in an alarm and the operation mode changes to mode B.

Mode B:

- Central control determines in to which sub mode B the system should operate;
- Different B sub-modes may exist;
- In mode B data begins to flow to central control. The pod speed may have to be reduced, or the pod may need to be stopped for the data to be collected;
- More than one pod may be directed to one location to cooperate in the data collection, processing and compilation;
- Some sensors work only at low speeds in mode B.

Mode C:

- Intervention takes place;

- 21 -

- Either by the same pod that is suitably equipped for the needed operation, or by a special intervention pod that is directed to the incident position.

As is apparent from the above description, the invention provides an unmanned vehicle (i.e., a pod), which enables a fast, efficient, on-the-spot response to any indication, threat or danger along its path. The pod according to the invention will be the first response for any event, regardless of the equipment it carries. The pod provides a very fast on-site indication of "what is happening". This enables the person behind the system to receive information from the site, seconds after an event has occurred, without the risk of lives or expensive vehicles damage. One of its main advantages is that it dramatically reduces the need for manned patrols, which in turn reduces perimeter defense cost dramatically. Additionally, personnel currently employed in such tasks can be redirected to other matters including building of a special, more experienced quality force that will be used only for real event response and retaliation.

Furthermore, the invention has the ability to receive a detection signal from another system such as, for example, an electronic fence, and then respond to it by reaching the relevant location and, by way of example

only, providing a video of the area to the control center that operates the security measures.

As the skilled person already understands from the above description, the invention is useful in very many different applications. For the purpose of illustration, and without in any way limiting the many possible uses, the invention can be conveniently exploited in respect of:

- a. Traffic violations detection and video taping of the same to provide hard evidence. A most common violation, speeding, is easy to detect by a fast pod riding on cables along the highway. Once there is a detection (mode A) then mode B would be following the speeding car and videotaping it for a period of time. Furthermore, active communication can be achieved between a law-enforcement agent and the driver, using a loudspeaker-microphone system provided in the pod.
- b. For airports a system that would scare off birds from landing and taking off paths, e.g., using appropriate sound or ultrasound generators.
- c. For airports, a system that would protect airplanes from missiles during take off and landing. With or without integration with active defense systems. The method would involve a pod riding next to the taking off or landing airplane,

- 23 -

equipped, for example, with a strong heat source or other distracting equipment. The heat source or other distracting equipment can be switched on only if there is a detection of a missile launch or it can be on during the whole take off or landing, in a manner similar to that employed by military aircrafts with missile distraction equipment when flying in a danger zone.

Although embodiments of the invention have been described by way of illustration, it will be understood that the invention may be carried out with many variations, modifications, and adaptations, without exceeding the scope of the claims.

Claims

1. A surveillance system, comprising an autonomous vehicle or pod provided with one or more sensors suitable to acquire data representative of a monitored area, said sensors being coupled with comparison means capable of comparing data acquired by said one or more sensors at the same location and at different times and to generate a signal indicative of a change in said data when two or more consecutive data sets are such that a difference can be determined.
2. A system according to claim 1, wherein the sensors are selected from among stills cameras, video cameras, thermal cameras, radars and the like imaging equipment.
3. A system according to claim 1, wherein the pod is provided with an electric motor.
4. A system according to claim 1, wherein the pod is equipped with location means.
5. A system according to claim 4, wherein the location means comprise GPS apparatus.

6. A system according to claim 1, wherein the pod is provided with communication means.

7. A method for securing a perimeter, comprising causing an autonomous vehicle to travel along said perimeter and above ground level at high speed, while traveling to acquire data representative of the status of a designated area and to compare data relative to a specific location with data acquired during a previous passage, and to generate a signal indicative of a change having taken place at said location if a difference is detected between data acquired at the same location but at different times.

8. A method for responding to an alarm situation generated by a static perimeter-securing system, comprising receiving an alarm signal from said static perimeter-securing system and responding to it by directing an unmanned pod to the relevant location and operating the equipment borne on said pod in a manner responsive to the alarm signal or to the reason for it.

9. A method according to claim 8, wherein the static perimeter-securing system is an electronic fence.

10. A surveillance system provided with active response means, comprising an autonomous vehicle or pod provided with one or more active response means capable of responding to a threat, danger or other situation considered anomalous under the operating conditions of the system, said active response being generated automatically or by manned remote control.

11. A system according to claim 10, wherein the active response means comprise a weapon.

12. A system according to claim 11, wherein the weapon is operated by a distant operator.

13. A system according to claim 10, wherein the active response means comprise automatically-actuated response means.

14. A system according to claim 10, wherein the active response means comprise sound-generating apparatus.

15. A system according to claim 10, wherein the active response means comprise liquid or gas dispensing apparatus.

16. A method for actively securing a perimeter, comprising causing an autonomous vehicle to travel along said perimeter and above ground level at high speed, and to actively respond to a threat, danger or other situation considered anomalous under the operating conditions of the system, said active response being generated automatically or by manned remote control.

17. A method according to claim 16, wherein the active response is primed by an alarm situation generated by a static perimeter-securing system, comprising receiving an alarm signal from said static perimeter-securing system and responding to it by directing an unmanned pod to the relevant location and operating the equipment borne on said pod in a manner actively responsive to the alarm signal or to the reason for it.

18. A method according to claim 17, wherein the static perimeter-securing system is an electronic fence.

1/4

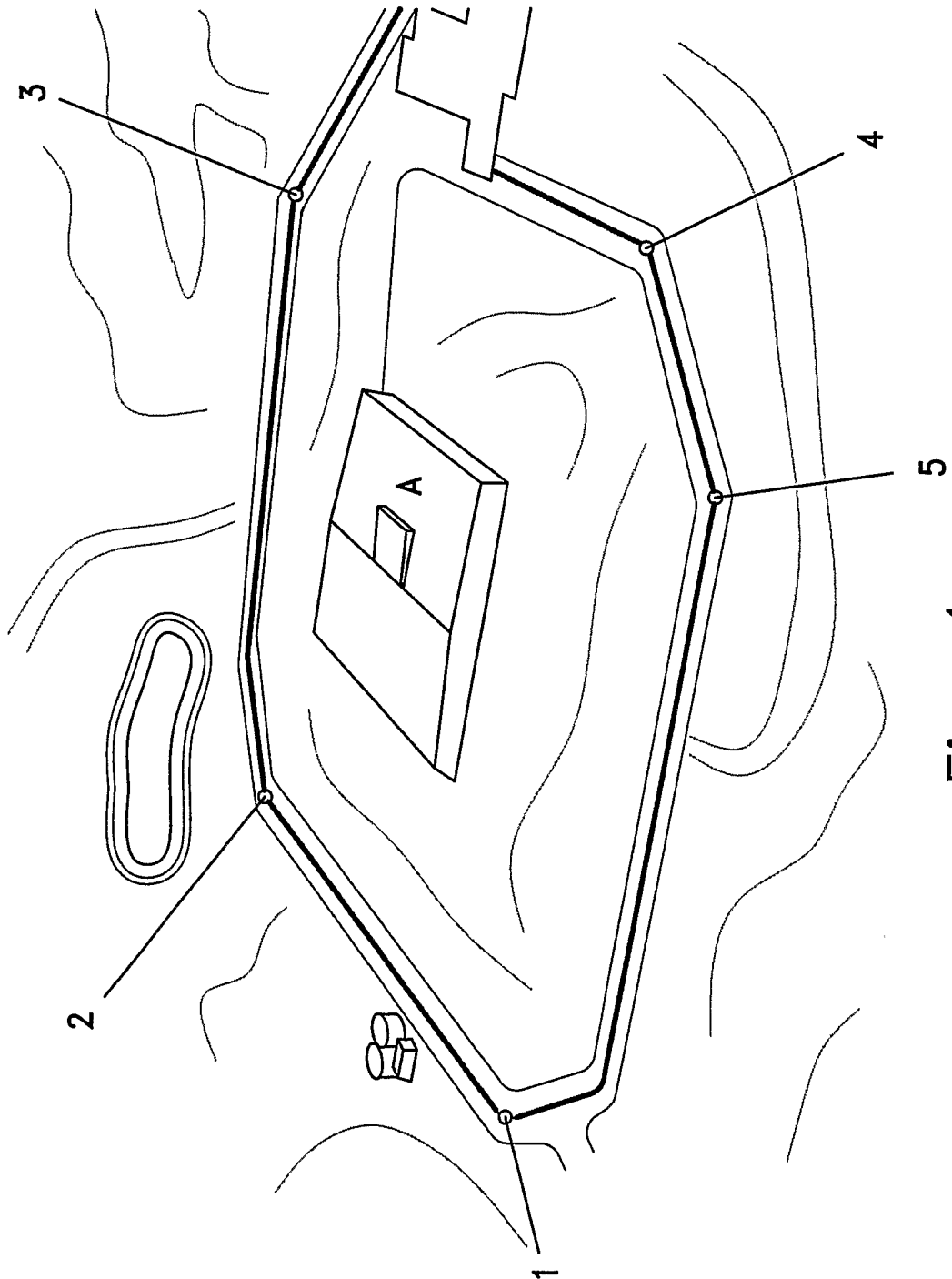


Fig. 1

2/4

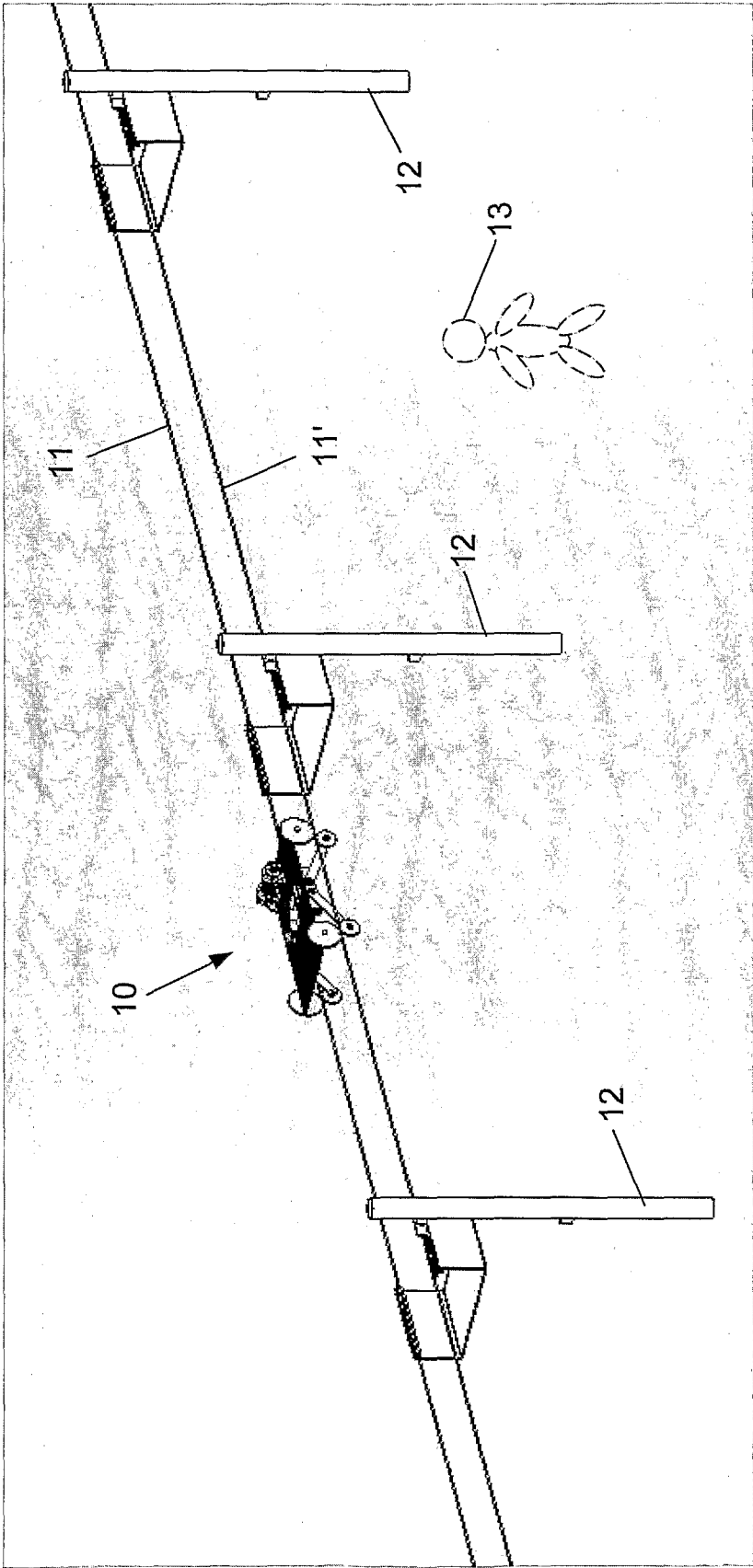


Fig. 2

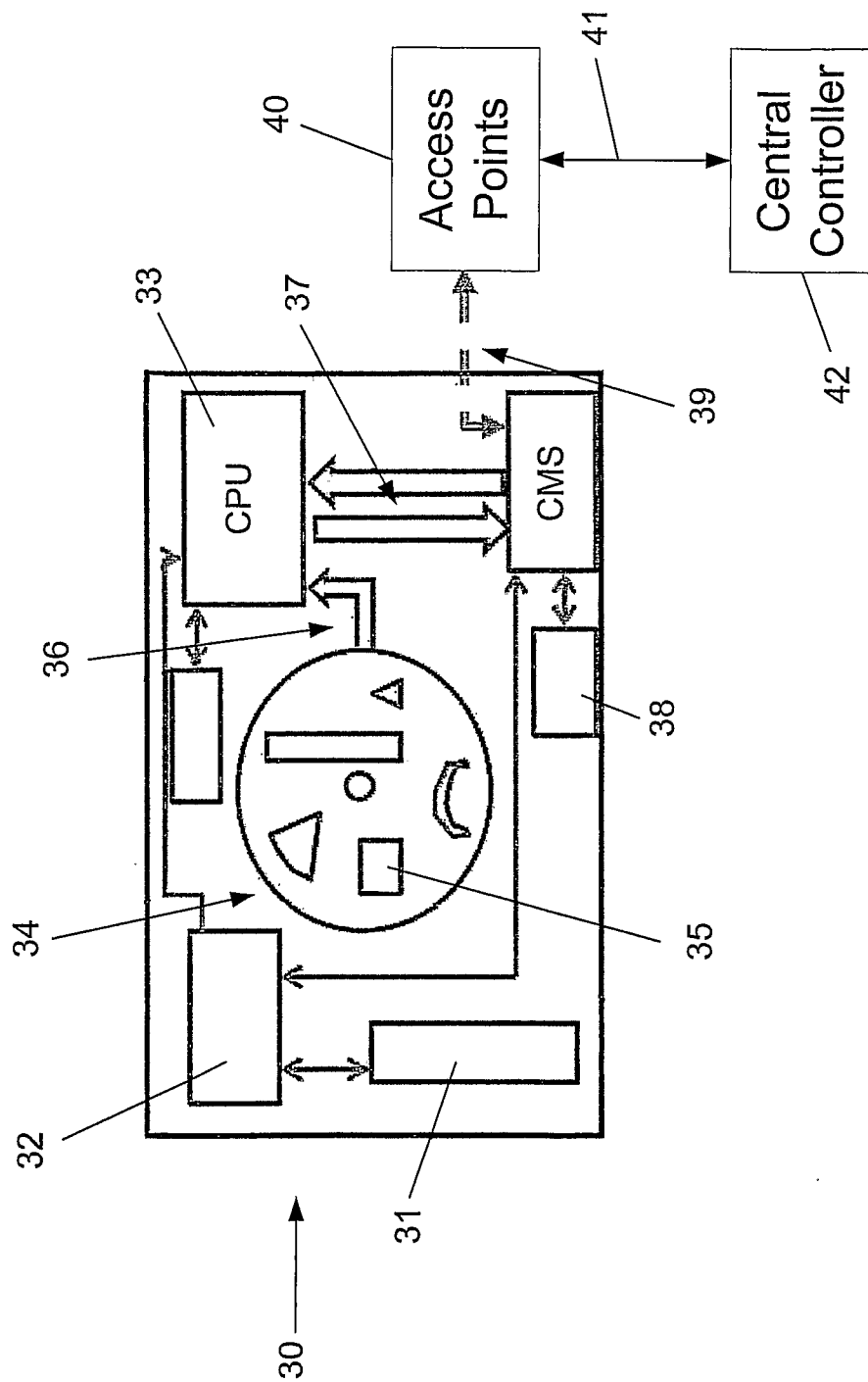


Fig. 3

4/4

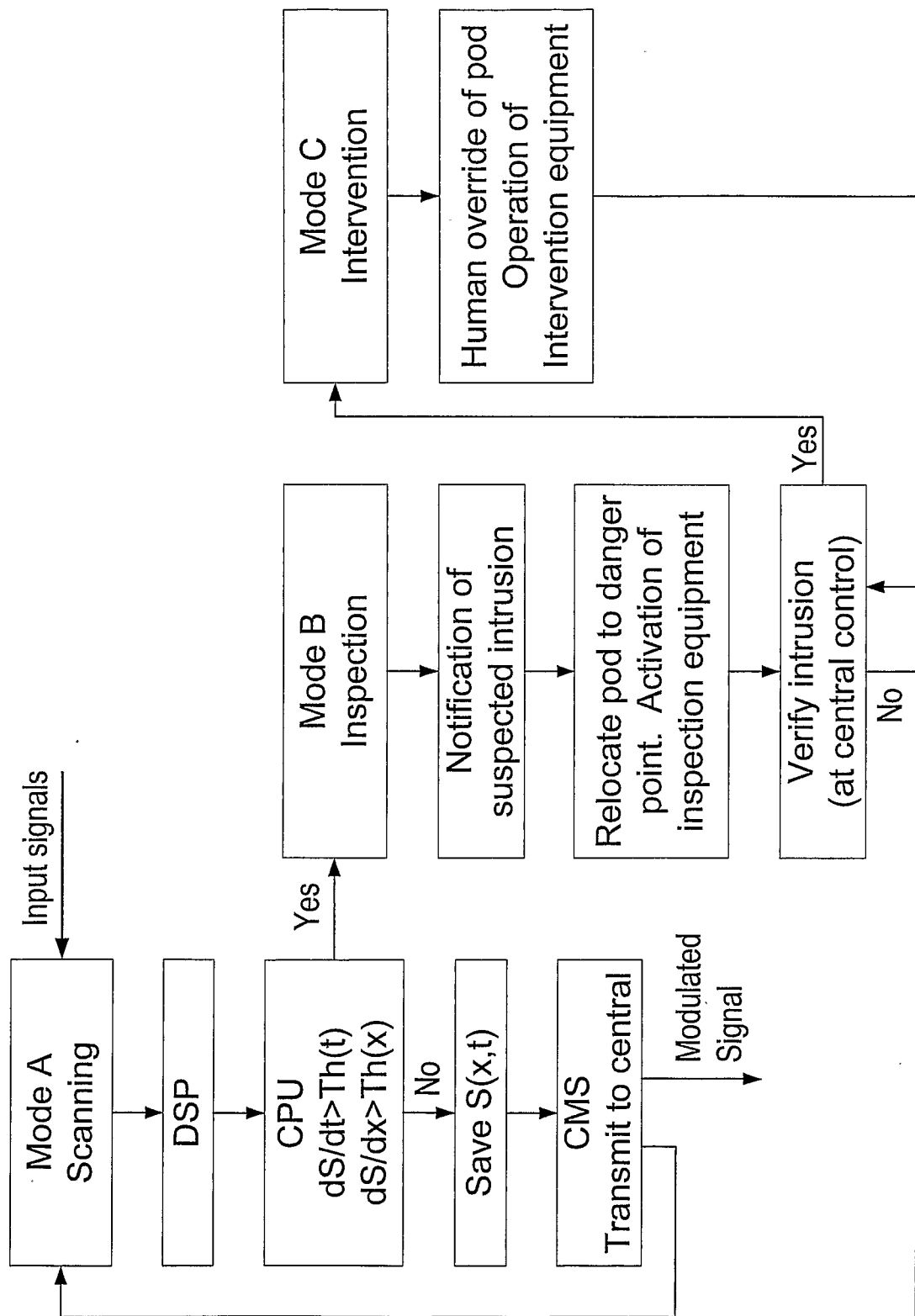


Fig. 4