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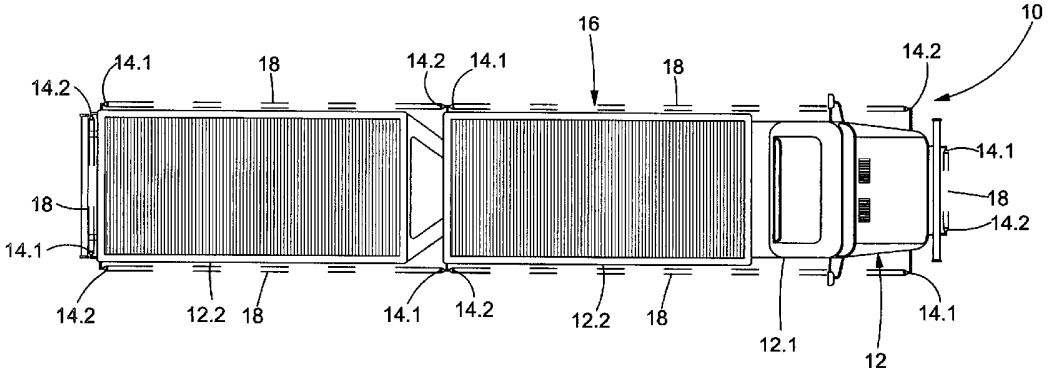
(54) Title: SECURITY SYSTEM FOR A VEHICLE



(57) Abstract: This invention relates to a security system 10 for detecting unauthorised access to a vehicle. The security system 10 comprises sensing means 14, in the form of a plurality of pairs of transmitters 14.1 and receivers 14.2, disposed on the outside of the vehicle 12. Beams 18 are transmitted and received between corresponding transmitters 14.1 and receivers 14.2 and thus delineate a restricted zone 16 surrounding the outer periphery of the vehicle 12. The security system 10 further comprises means responsive to the sensing means 14 for registering detection of unauthorised to the restricted zone 16. The means responsive to the sensing means 14 is in the form of a controller 24, which is activated by remote control 26 and deactivated by means of a keypad 28 disposed inside the vehicle 12.

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SECURITY SYSTEM FOR A VEHICLE

INTRODUCTION AND BACKGROUND TO THE INVENTION

This invention relates to a security system for a vehicle.

A known security system for a vehicle includes sensing means disposed inside a vehicle to sense unauthorised entry into and movement inside the vehicle.

A disadvantage of such sensing means is that a person can still gain unauthorised access to the outside of the vehicle, to remove items attached to the vehicle, such as wheels, trailers or other components connected to the vehicle. In particular, the wheels of load carrying articulated trucks are relatively very expensive and are often exposed to this type of theft.

OBJECT OF THE INVENTION

It is therefore an object of the present invention to provide a security system for a vehicle with which the aforesaid disadvantage can be overcome or at least minimised.

SUMMARY OF THE INVENTION

According to the invention there is provided a security system for a vehicle comprising sensing means disposed on the vehicle for detecting the unauthorised access to a restricted zone located on the outside of the vehicle;

and means responsive to the sensing means for registering unauthorised access sensed by the sensing means.

The sensing means may be in the form of a transmitter disposed on the outside of the vehicle for transmitting a beam across a peripheral outer region of the vehicle thus delineating the said restricted zone.

The sensing means may further include a receiver for receiving the beam transmitted by the transmitter.

The transmitter may be disposed at one corner of the vehicle and the receiver may be disposed at another adjacent corner.

A plurality of sensing means may be disposed on the outside of the vehicle so that the entire outer periphery of the vehicle is covered by the sensing means.

Preferably, the beam extends in close proximity across the peripheral outer region of the vehicle.

The sensing means may be mounted on a support and may be adapted to fold back, when not in use, into a receptacle defined in the body of the vehicle.

The means responsive to the sensing means may include an alarm for emitting an alarm signal when unauthorised access to the restricted zone is sensed by the sensing means.

The alarm signal may be in the form of an audible signal and/or a notification signal, which may be transmitted to a remote receiver.

The means responsive to the sensing means may further include an immobiliser for immobilising the vehicle.

The arrangement of the transmitter and receiver may be such that, should a beam be interrupted, the alarm is activated.

The vehicle may be in the form of an articulated vehicle comprising a horse and trailer assembly, with the transmitter disposed on either one of the horse or the trailer and the receiver being disposed on the other one, the arrangement therefore being further such that, should a person manage to gain unauthorised access to the horse and drive off with the vehicle without detection, the beams will be interrupted when the horse and trailer moves out of line when the vehicle turns, so that the alarm is triggered.

The security system may further include a control unit which may be activated by remote control and which may include a keypad disposed inside the vehicle and through which a deactivation code may be keyed in.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described further by way of a non-limiting example with reference to the accompanying drawings wherein:

figure 1 is a plan view of an articulated vehicle comprising a horse and trailer assembly, provided with an activated security system according to a preferred embodiment of the invention;

figure 2 is the same as that of figure 1, with the security system deactivated; and

figure 3 is a block diagram of the security system of figure 1.

DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

Referring to the drawings, a security system according to a preferred embodiment of the invention, for a vehicle is generally designated by reference numeral 10.

The security system 10 is suitable to detect unauthorised access to any vehicle, but is described herein with particular reference to an articulated load-carrying vehicle 12. The articulated vehicle 12 comprises a horse 12.1 and trailer assembly 12.2.

The security system 10 comprises sensing means 14 disposed on the outside of the vehicle 12 for detecting unauthorised access to a restricted zone 16 located on the outside of the vehicle 12; and means responsive to the sensing means 14 for registering detection of the unauthorised access by the sensing means 14.

The sensing means 14 is in the form of a plurality of pairs of transmitters 14.1 and receivers 14.2 disposed on the respective outside corners or sides of the vehicle 12. Beams 18, such as laser beams or infra-red beams are transmitted and received between corresponding transmitters 14.1 and receivers 14.2. The beams 18 thus delineate a restricted zone 16 surrounding the outer periphery of the vehicle 12 and which extends in close proximity across the outer periphery of the vehicle 12. The sensing means 14 are mounted on supports 20 and are adapted to fold back, when not in use, into receptacles 22 defined in the body of the vehicle 12, as shown in figure 2.

The means responsive to the sensing means 14 is in the form of a controller 24. The controller 24 is activated by remote control 26 and includes a keypad 28 disposed inside the vehicle 12 and through which a deactivation code may be keyed in.

The controller 24 includes an alarm device 34 for emitting an audible alarm signal when unauthorised access to the restricted zone 16 is sensed by the sensing means 14. The controller 24, in addition emits a notification signal, which is transmitted to a remote receiver 30 such as those found at security companies. The controller is further connected to an immobiliser 32 for immobilising the vehicle 12.

In use, the security system 10 is activated by the remote control 26 to switch the beams 18 on. If the beams 18 between the transmitters 14.1 and receivers 14.2 are disrupted, the controller 24 activates the alarm device 34 and immobiliser 32 and sends a notification signal to the remote receiver 30. Should a person, however, manage to gain unauthorised access to the horse 12.1 and drive off with the vehicle 12, the beams 18 will be interrupted when the horse 12.1 and trailer 12.2 move out of line when the vehicle 12 turns, so that the controller 24 is activated and the alarm device 34 triggered. When deactivating the security system 10, an authorised person gets into the vehicle 12 and enters a deactivation code into the keypad 28 disposed inside the vehicle 12. It will be appreciate that a delay of a few seconds is allowed from detecting access to the restricted zone 16, to the activation of the alarm device 34 to allow such authorised person to deactivate the security system 10 manually.

The applicant has found that with a security system 10 according to the invention, theft of items attached to a vehicle, such as wheels, trailers or other components connected to the vehicle is minimised and effectively curtailed.

It will be appreciated that variations in detail are possible with a security system for a vehicle according to the invention without departing from the scope of the appended claims.

CLAIMS

1. A security system for a vehicle comprising sensing means disposed on the vehicle for detecting the unauthorised access to a restricted zone located on the outside of the vehicle; and means responsive to the sensing means for registering unauthorised access sensed by the sensing means.

2. A security system for a vehicle according to claim 1 wherein the sensing means is in the form of a transmitter disposed on the outside of the vehicle for transmitting a beam across a peripheral outer region of the vehicle thus delineating the said restricted zone.

3. A security system for a vehicle according to claim 2 which further includes a receiver for receiving the beam transmitted by the transmitter.

4. A security system for a vehicle according to claim 3 wherein the transmitter is disposed at one corner of the vehicle and the receiver is disposed at another adjacent corner.

5. A security system for a vehicle according to any one of claims 2 to 4 wherein a plurality of sensing means are disposed on the outside of the

vehicle so that the entire outer periphery of the vehicle is covered by the sensing means.

6. A security system for a vehicle according to claim 5 wherein the beam extends in close proximity across the peripheral outer region of the vehicle.

7. A security system for a vehicle according to any one of the preceding claims wherein the sensing means is mounted on a support and is adapted to fold back, when not in use, into a receptacle defined in the body of the vehicle.

8. A security system for a vehicle according to any one of the preceding claims wherein the means responsive to the sensing means includes an alarm for emitting an alarm signal when unauthorised access to the restricted zone is sensed by the sensing means.

9. A security system for a vehicle according to claim 8 wherein the alarm signal is in the form of an audible signal and/or a notification signal, which is transmitted to a remote receiver.

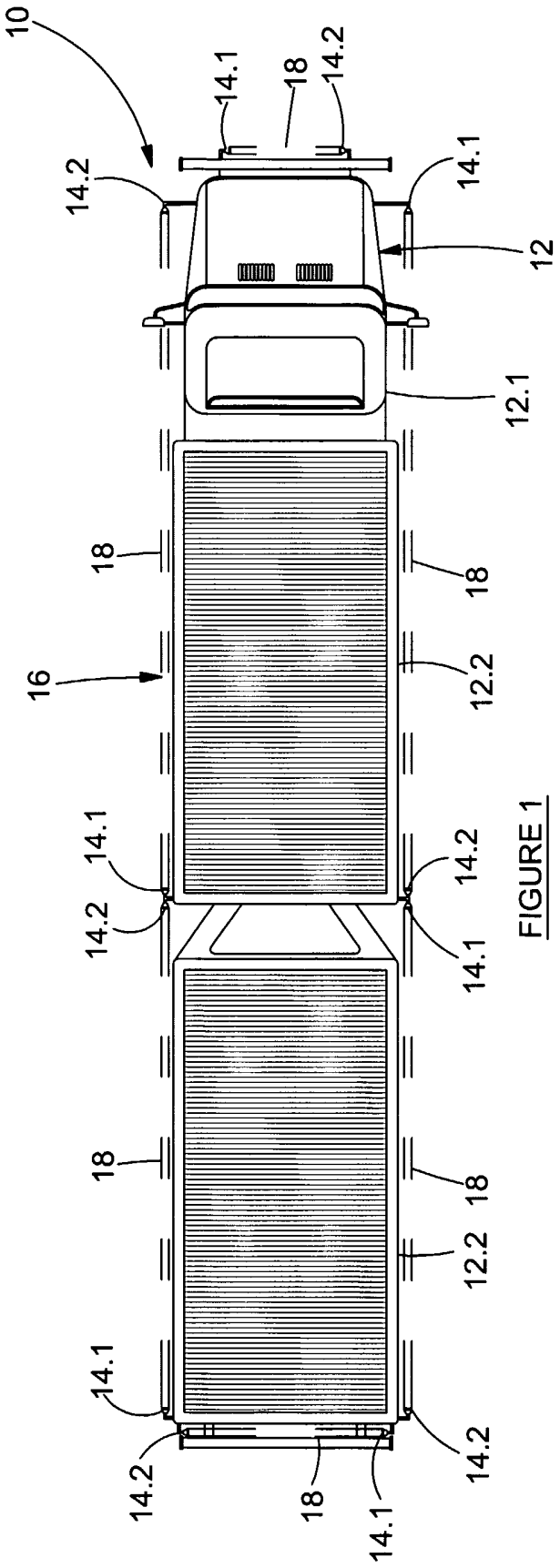
10. A security system for a vehicle according to claim 9 wherein the means responsive to the sensing means further includes an immobiliser for immobilising the vehicle.

11. A security system for a vehicle according to any one of claims 8 to 10 insofar as they are dependant on claim 3 wherein the arrangement of the transmitter and receiver is such that, should a beam be interrupted, the alarm is activated.

12. A security system for a vehicle according to claim 11 wherein the vehicle is in the form of an articulated vehicle comprising a horse and trailer assembly, with the transmitter disposed on either one of the horse or the trailer and the receiver being disposed on the other one, the arrangement therefore being further such that, should a person manage to gain unauthorised access to the horse and drive off with the vehicle without detection, the beams will be interrupted when the horse and trailer moves out of line when the vehicle turns, so that the alarm is triggered.

13. A security system for a vehicle according to any one of the preceding claims which further includes a control unit which is activated by remote control and which includes a keypad disposed inside the vehicle and through which a deactivation code is keyed in.

14. A security system for a vehicle substantially as herein described and as illustrated in the accompanying drawings.


10
14.1
18
14.2
14.2
14.1
12
12.1
18
18
16
12.2
14.1
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18
14.1

FIGURE 1

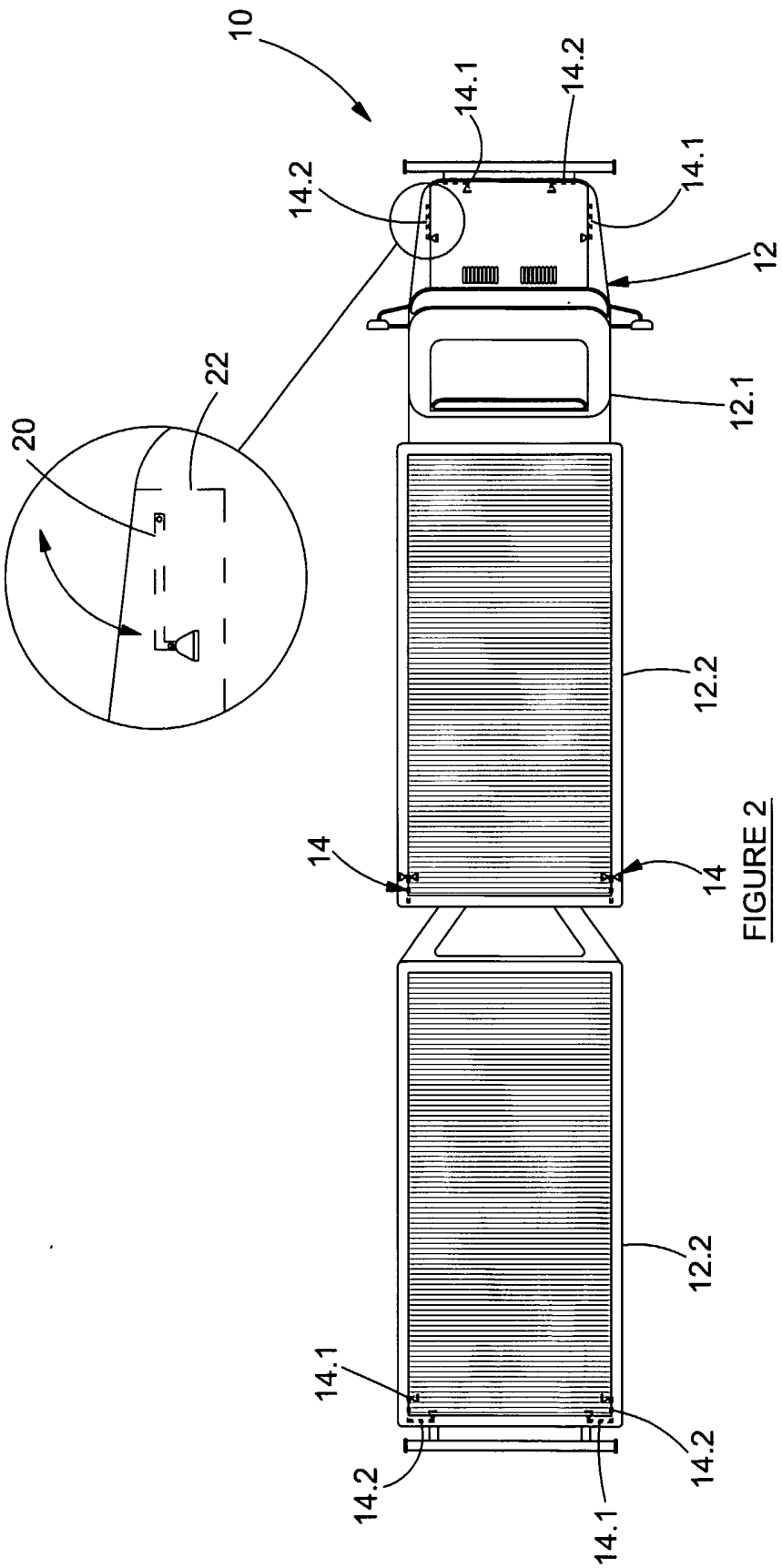

FIGURE 2

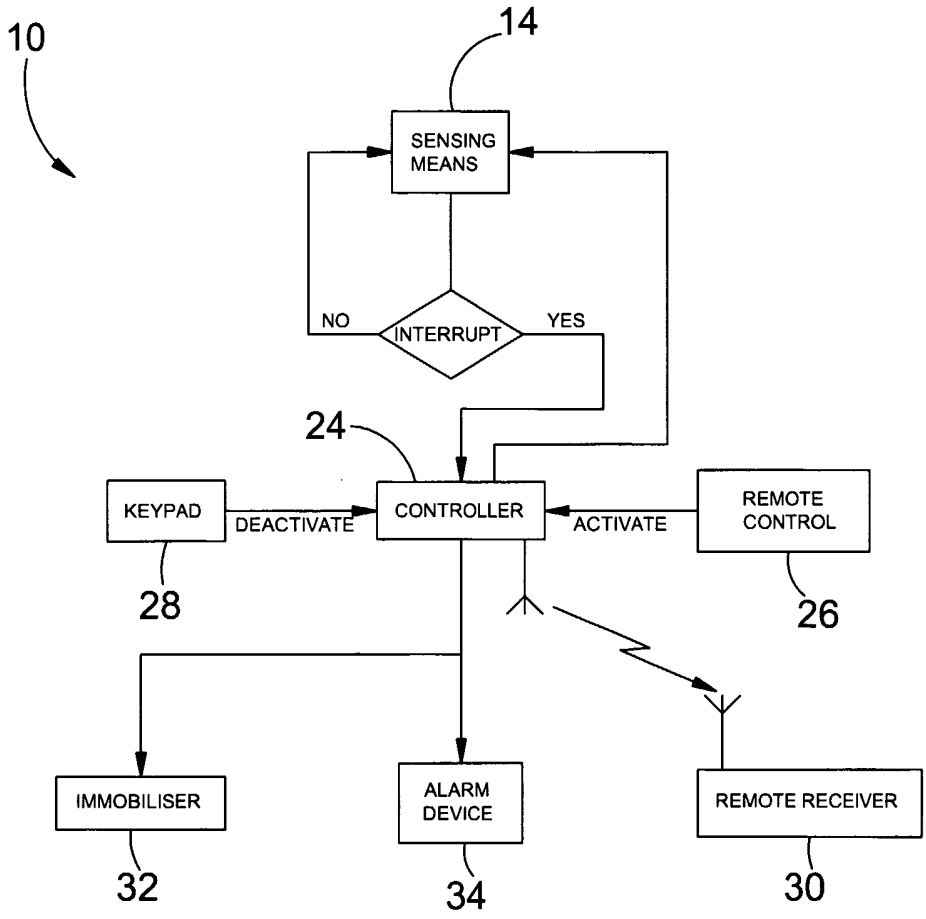
10
14
SENSING MEANS
NO
INTERRUPT
YES
24
KEYPAD
DEACTIVATE
CONTROLLER
ACTIVATE
REMOTE CONTROL
28
26
IMMOBILISER
ALARM DEVICE
REMOTE RECEIVER
32
34
30

FIGURE 3

INTERNATIONAL SEARCH REPORT

International Application No
PCT/ZA 03/00065

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G08B13/183

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G08B B60R B60Q G01S

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
3 October 2003	10/10/2003

Name and mailing address of the ISA	Authorized officer
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