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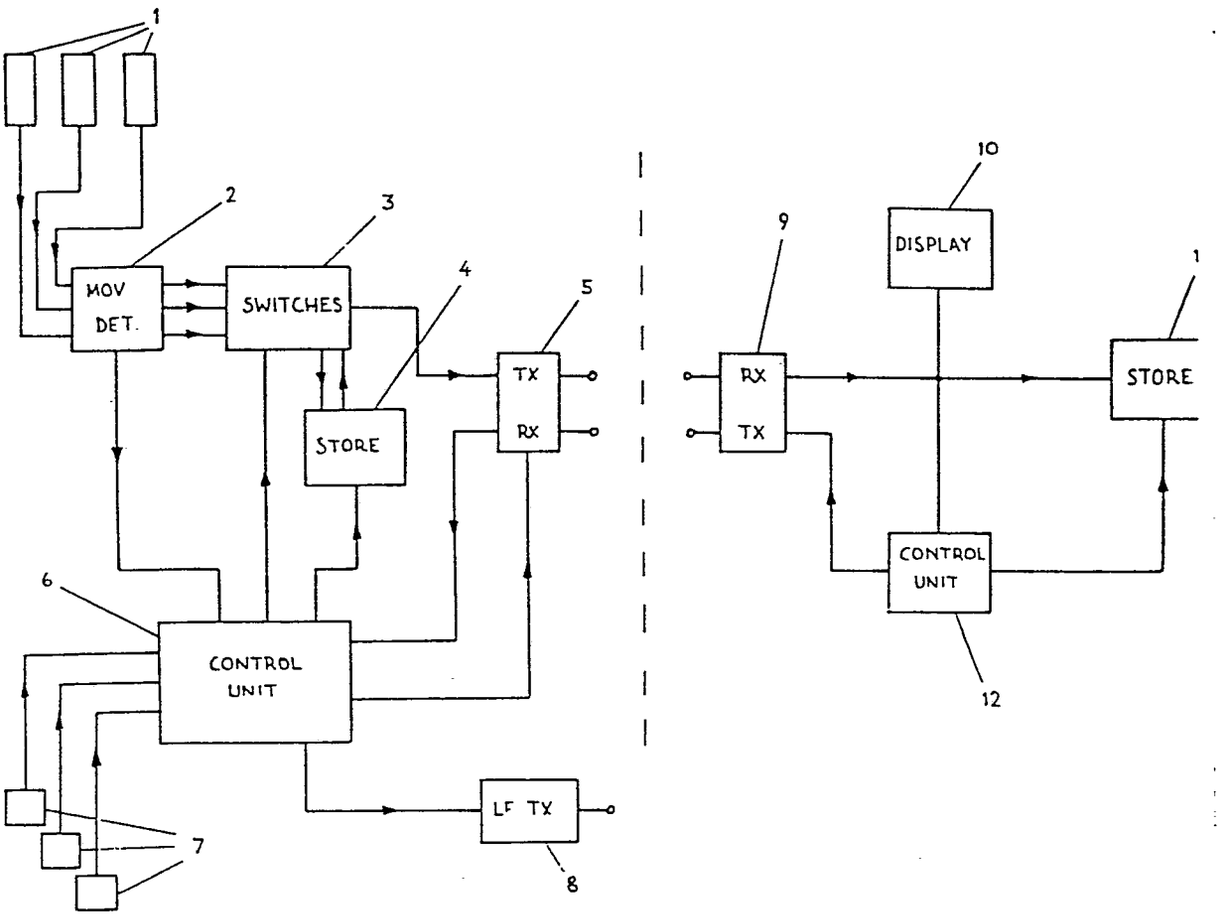
(54) **Surveillance system.**

(57) A surveillance system for detecting intruders in a protected area or property comprises unmanned closed circuit television apparatus inside the area or property with a transmitter (5) for transmitting video signals via a signal link to a mobile unit (9,10,11,12) positioned temporarily adjacent the area or property. The transmission of signals from the fixed apparatus can only be activated by a coded access signal fed via the link from a store (11) in the mobile unit to a control unit (6) in the fixed apparatus. A recording device or store (4) records signals from cameras (1) when triggered by a movement detector (2) or other sensors (7). The mobile unit includes means for causing recorded video signals in the store (4) to be transmitted via the link to the display unit (10).

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MOV DET.
SWITCHES
STORE
TX
RX
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CONTROL UNIT
LF TX
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9
DISPLAY
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RX
TX
STORE
CONTROL UNIT
12

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Surveillance System

This invention relates to a surveillance system which includes closed circuit television to monitor a protected property.

It is well known to use closed circuit television (CCTV) cameras situated at strategic points within a protected property. In general the output signal from each camera is fed to a manned central station within or adjacent the property where an operator can select a picture from any of the cameras and keep a watch on movements in various parts of the property. Commonly the central station is manned only during working hours and the CCTV system is inactive at night. To provide some measure of security at night an arrangement may be made with a security contractor, whereby the contractor visits the property at least once during the night to check, for example, the perimeter fence and entrances. The disadvantages of this arrangement are that security at night is relatively poor compared with that during the day, in that an intruder may enter and escape from the premises undetected when the security contractor is absent, and the owner of the protected property has no way of confirming that the contractor has carried out an adequate check on the property.

It is an object of this invention to provide an improved surveillance system for unmanned night operation.

According to one aspect of this invention there is provided a method of monitoring a protected property wherein an electrical, electromagnetic or sonic link is temporarily established between fixed closed circuit television apparatus inside

the property and a mobile monitoring unit outside the property, and wherein signals from the fixed apparatus are automatically transmitted via the link to the mobile unit only after a predetermined coded access signal has been fed to the system by the mobile unit.

According to another aspect of this invention there is provided a closed circuit television surveillance system comprising:-

fixed apparatus associated with a protected area or property to be monitored, which apparatus comprises, inside the area or property, a plurality of television cameras, a switching unit operable to select an output signal from any one of the cameras, means for transmitting the output signal of a selected camera via a temporary signal link to a location outside the monitored area or property, and a control unit operable to receive an access signal including a predetermined access code, and to cause the output signal to be transmitted automatically by the transmitting means in response to the access signal; and

a mobile monitoring unit outside the monitored area or property having means for feeding the access signal into the fixed apparatus, and a display unit operable to receive the said output signal from the transmitting means when the access signal has been fed to the control unit.

In this way the mobile unit, which may be for example a security contractor's motor vehicle parked temporarily outside the protected property, can be used to receive video signals and other data from unmanned CCTV apparatus inside the property.

Preferably the link between the fixed apparatus and the mobile unit is a relatively short range radio or other

electromagnetic coupling which allows signals to be exchanged in both directions between the mobile unit and the fixed apparatus when the mobile unit is in a predetermined position adjacent the protected property. Examples of a suitable electromagnetic link include a magnetic induction loop system and a light beam link such as a modulated laser beam system. The system is such that information can only be transmitted to the mobile unit when the coded access signal is received and recognised by the control unit of the fixed apparatus. The access signal may be stored electronically in the mobile unit, it may be unknown even to the operator of the mobile unit, and may be changed from day to day to prevent unauthorised use of the system. Conveniently the access signal is transmitted without a physical connection such as a cable link between the mobile unit and the fixed apparatus. However in a simplified system in which signals are transmitted in one direction only, that is from the fixed apparatus to the mobile unit, alternative means of feeding the access signal to the control unit, for example a magnetic card inserted in a fixed card reader, may be used.

In the case where signals can be transmitted both to and from the fixed apparatus, the mobile unit can be used for remote control of a switching unit inside the fixed apparatus so that remote selection of cameras is possible. This enables an operator inside the mobile unit to carry out a complete check on all parts of the property covered by the CCTV apparatus. A useful extension of the surveillance capabilities of the system can be obtained if the fixed apparatus includes a recording device, for example a video-tape recorder, which can be automatically activated by alarm sensors such as microwave, ultrasonic or CCTV movement

detectors, light beam detectors, and door and window contacts, the recording device being activated to record the signal from a particular camera depending on the location of the triggered sensor. Therefore, in the preferred embodiment of the system, the control unit is connected to the recording device, and the mobile unit includes circuits for remotely controlling it so that the operator of the mobile unit can check whether any intruders were detected before his arrival at the property. Having carried out a check for recorded detections, the operator then selects each camera in turn for live monitoring of the property, and then in accordance with a preferred feature of the invention, the mobile unit transmits a record of the operations performed by the mobile unit for storage in the fixed apparatus, thereby enabling the owner of the property to confirm that the mobile unit operator has carried out his assigned checks. All of the above operations can be carried out without the operator having to leave the mobile unit.

A preferred embodiment of the invention is illustrated in the accompanying drawing which is a block diagram showing the fixed apparatus on the left hand side and the mobile unit on the right hand side.

Referring to the drawing, the fixed apparatus has a plurality of CCTV cameras 1 connected via a movement detector unit 2 to a switching unit 3. The switching unit 3 is operable to select an output signal from any of the cameras 1 or from a recording device 4, and to feed the selected signal to a fixed transmitter/receiver unit 5. The fixed apparatus as a whole is controlled by the control unit 6, which is

connected to receive the coded access signal and interrogation signals from the mobile unit via the receiving section of the transmitter/receiver unit 5. The primary functions of the control unit 6 are to receive and recognise the access signal, to activate the transmitter section of the unit 5 in response to the access signal, to control the selection of signals to be transmitted in response to instructions received from the mobile unit, and to activate the recording device 4 when the movement detectors 2 or other alarm sensors 7 are triggered. This embodiment also includes a separate radio transmitter 8 for the remote triggering of an external alarm when an intruder is sensed by the movement detectors or other alarm sensors. The control unit may comprise a computer having a memory for storing sensor information, information relating to the checks carried out by the mobile unit, and if there is sufficient storage space, for storing video information from the CCTV apparatus in place of the videotape recorder 4.

The mobile unit comprises a transmitter/receiver unit 9, a display unit 10, and a recording device 11. The recording device 11 may be a videotape recorder or may be part of a small computer. The various parts of the mobile unit are connected to a control unit 12 which generates the coded access signal and feeds it to the transmitter section of the unit 9. The control unit 12 also produces interrogation signals whereby the operator can select the signals for transmission by the fixed apparatus. A system for relaying an alarm call by radio may also be included in the mobile unit.

Claims:

1. A method of monitoring a protected property wherein an electrical, electromagnetic or sonic link is temporarily established between fixed closed circuit television apparatus inside the property and a mobile monitoring unit outside the property, and wherein signals from the fixed apparatus are automatically transmitted via the link to the mobile unit only after a predetermined coded access signal has been fed to the system by the mobile unit.

2. A method according to claim 1 including feeding an activating signal via the link to the fixed apparatus to activate automatically the transmission of recorded video signals from a recording device in the fixed apparatus to the mobile unit.

3. A method according to claim 1 or claim 2 further including the step of causing a record of a monitoring operation carried out by the mobile unit automatically to be stored in the fixed apparatus.

4. A closed circuit television surveillance system comprising fixed apparatus associated with a protected area or property to be monitored, which apparatus comprises, inside the area or property, a plurality of television cameras, a switching unit operable to select an output signal from any one of the cameras, means for transmitting the output signal of a selected camera via a temporary signal link to a location outside the monitored area or property, and a

control unit operable to receive an access signal including a predetermined access code, and to cause the output signal to be transmitted automatically by the transmitting means in response to the access signal; and

a mobile monitoring unit outside the monitored area or property having means for feeding the access signal into the fixed apparatus, and a display unit operable to receive the said output signal from the transmitting means when the access signal has been fed to the control unit.

5. A system according to claim 4 for detecting intruders in the protected area or property, wherein the fixed apparatus inside the area or property includes a recording device operable to record automatically video signals from the cameras, and means for causing the video signals stored by the recording device to be transmitted automatically by the transmitting means in response to a trigger signal fed to the control unit from outside the area or property.

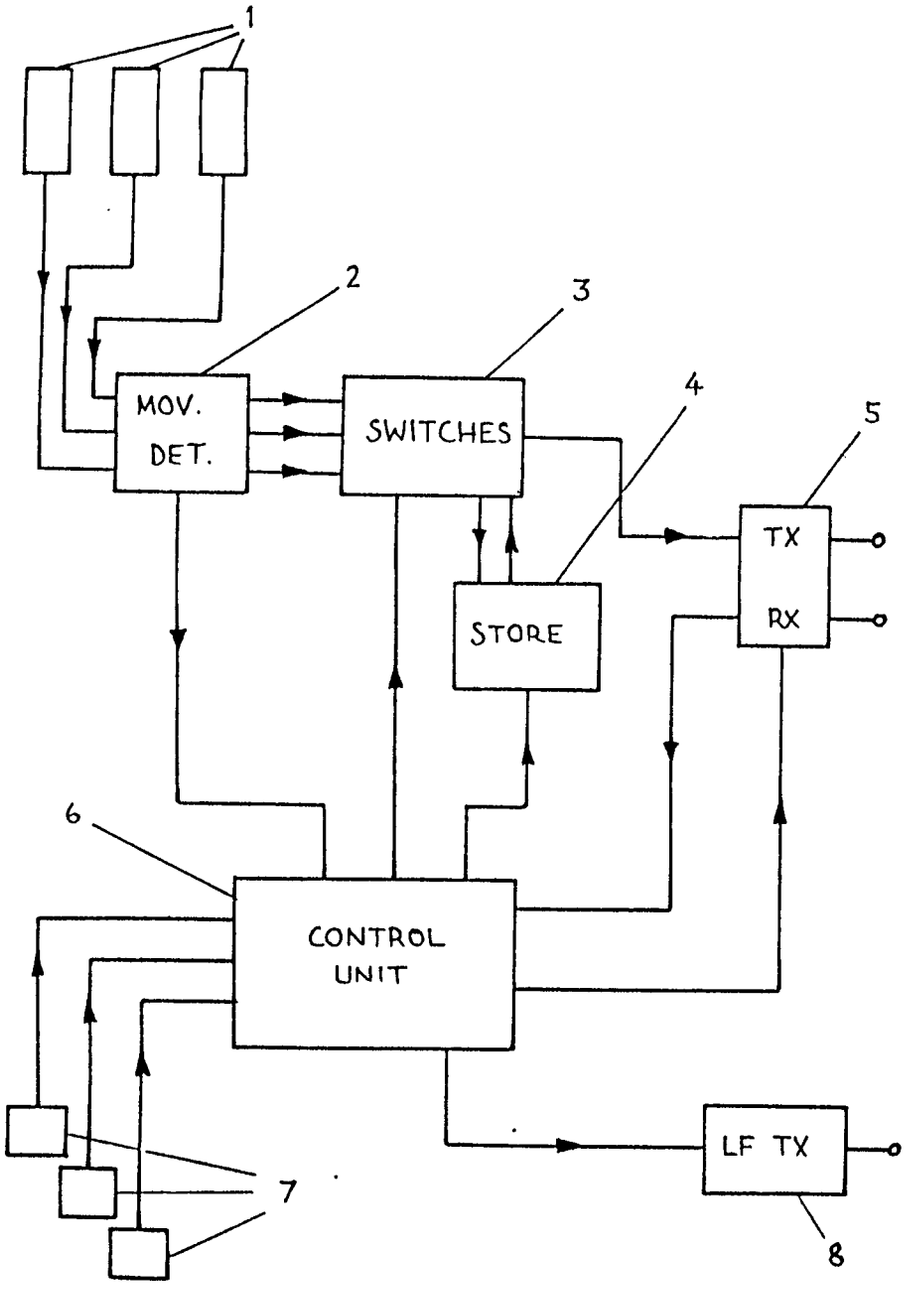
6. A system according to claim 5 wherein the fixed apparatus includes a plurality of intruder sensors operable to initiate recording of a video signal from one of the cameras by the recording device.

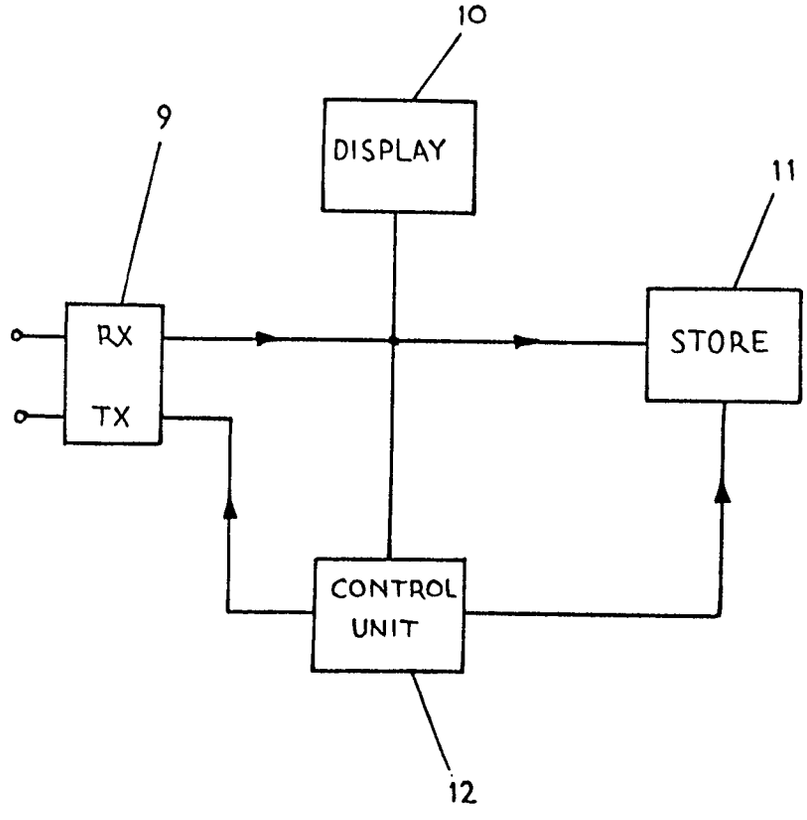
7. A system according to claim 6 wherein the sensors include a movement detector.

8. A system according to any of claims 4 to 7, wherein the signal link comprises a two-way short-range radio link between the fixed apparatus and the mobile unit.

9. A system according to any of claims 4 to 7 wherein the signal link includes magnetic induction loop apparatus forming part of the fixed apparatus and located adjacent the protected area or property.

10. A system according to any of claims 4 to 7, wherein the fixed apparatus includes a magnetic card reader positioned adjacent the protected area or property for feeding the access signal to the control unit.


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LF TX
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DISPLAY
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RX
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STORE
CONTROL
UNIT
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