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INTELLIGENT SECURITY - METHOD AND CONTROL DEVICE FOR DANGER DEFENCE BY MEANS OF ENGINE-LIKE ACOUSTICS AND VIBRATION ON AN ELECTRIC VEHICLE BY AN ACOUSTIC SOU

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INTELLIGENT SECURITY - METHOD AND CONTROL DEVICE FOR DANGER DEFENCE BY MEANS OF ENGINE-LIKE ACOUSTICS AND VIBRATION ON AN ELECTRIC VEHICLE BY AN ACOUSTIC SOUND GENERATOR AND A UAV

Technical task:

The patent idea Intelligent Security describes a method and a control device for hazard prevention by means of an acoustic sound generator using engine-like acoustics and vibration on an electric vehicle and a UAV which controls the sound generator and also triggers UAV-specific defence components in the form of scents or laser light effects.

Initial situation:

At night, vehicles are often damaged by rodents that gnaw at the wiring and cables in the underbody of the vehicle. This damage causes the vehicle to break down and high repair costs are incurred. Electric vehicles are particularly sensitive to rodents because they have a high number of cables and wires. There is a considerable risk here with regard to a short-circuit hazard and the associated cable scorching, which can lead to secondary damage to the battery.

Solution:

The problem is solved by a multi-stage, automated security system, which is actively switched on at the boundary of an envelope curve (4) around the vehicle to the environment to keep rodents at a distance. For this purpose, the acoustic generators installed as standard in electrically driven motor vehicles are used to generate an engine-like operating noise. These noises are used to deter rodents far in front of the vehicle or to drive them out of a safety area around the vehicle. In connection with the UAV, the operating noise is activated by means of a camera or a night vision camera and/or by touching the vehicle in the form of scratching movements detected specifically for structure-borne sound. This function also serves to deter people who wish to cause damage to the vehicle in the dark or who intend to steal it. The person or animal is detected and subsequently classified. In this process, the sound generator of the electric vehicle can generate a very specific, highly effective defensive sound that corresponds to the classification or grouping of the detected danger. This means that after the Intelligent Security defence system has been activated, the motor vehicle is monitored by at least one camera and a structure-borne sound probe on the chassis and, in the event of signal changes, in a first processing step generates a sound pressure level which, depending on the object/animal species detection, has an efficient deterrent effect, i.e. is animal-specific deterrent. In a further processing step, an optional vibration is generated on the sound generator, which is similar to the starting noise of a motor vehicle. In a third processing step, the Intelligent Security System can also coordinate a UAV supplementary defence function in the event of conspicuous camera surveillance and animal perception in the vicinity of the vehicle and ward off the animal/person. The UAV uses the control function of the sound generator from the E-vehicle and/or a scent absorber or laser light installed in the UAV.

The patent idea focuses primarily on electrically powered vehicles and helps to solve the problem:

- a vehicle surveillance camera / a surveillance system in general
- a structure-borne sound sensor
- a sound generator, advantageous for a state-of-the-art electric vehicle
- an animal-specific setup / noise characteristic or frequency band spectrum in
- a control unit, which optionally
- a UAV activated with
- a fragrance generator, and/or
- a laser light
- a position sensor defining an envelope around the vehicle

Functional sequence explained using an example:

- H. Huber parks his electric vehicle (1) in the carport in front of his house in the evening
- During the night hours a marten (2) approaches the vehicle
- In a first processing step, the camera (10) of the motor vehicle detects the uninvited guest, i.e. classifies him as a marten (2)
- Referring to the classification (2) of the attacker "Marder", the sound generator (13) is processed by the Intelligent Security (6) in a second step with a
- animal-specific effective noise (13), i.e. in the present case controlled by a high-frequency whistle

In a special design, depending on the result of the first defence, an activity of a UAV (3) connected to the vehicle is started by the Intelligent Security Control Unit (6) in a third processing step in order to chase away the marten. The UAV makes use of the defence techniques known specifically to animals, which achieve their efficiency by using light and/or scent effects (12) to drive the attacker out of a defined area (4) around the vehicle (1).

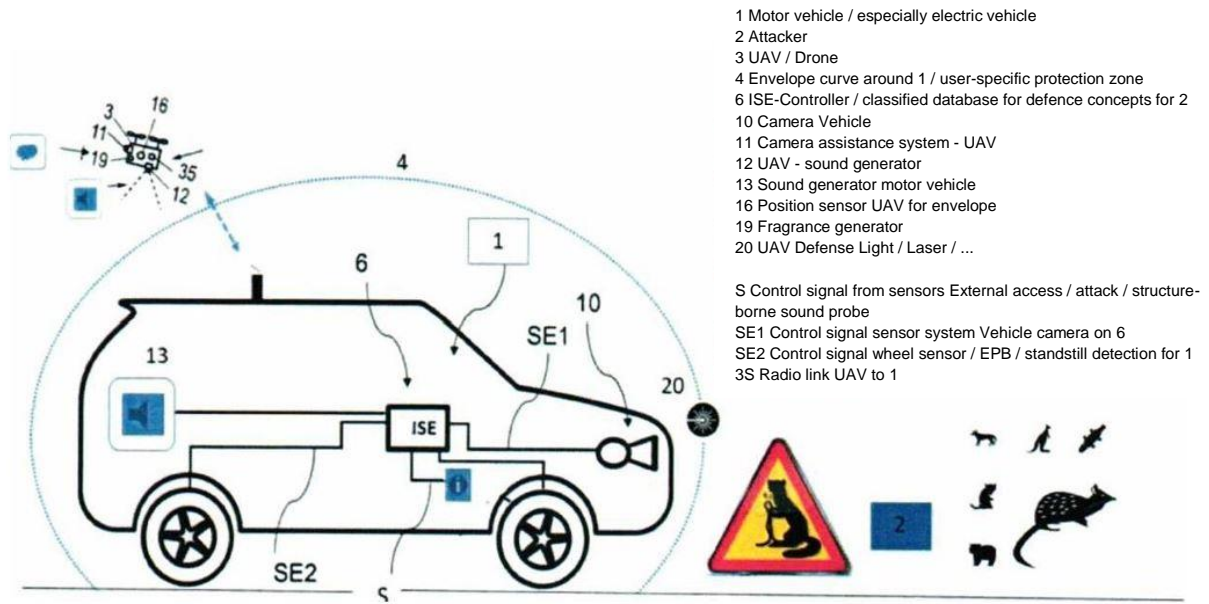


Figure 1

Advantages:

- Cost-effective, highly efficient defence due to existing E-module component on the vehicle
- Attacker-specific defence system with UAV assistance within an envelope around the vehicle
- Increased safety for an e-vehicle against bite / short circuit damage
- Increased safety for users of an e-vehicle