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(54) **METHOD AND DEVICE FOR ELECTROMAGNETIC IMPACT ON INVADER** (57) Summary: The group of inventions relates to the field of obtaining mechanical vibrations using electromagnetism and can be used in systems for the physical protection of objects from intruders. The method of electromagnetic impact on the intruder involves use of an amplitude-modulated microwave electromagnetic field with a variable modulation frequency. In this case, the amplitude modulation frequencies are taken in the range mechanical resonant frequencies of the head offender and individual elements of his body hearing, providing non-lethal pain effects. Microwave electromagnetic device impact contains a microwave electromagnetic generator with a radiating antenna, an amplitude modulator and a low frequency tuning unit configured to mechanical resonant frequency of the head offender and individual elements of his organs of hearing. In this case, the output of the tuning block is low frequency connected to the control input amplitude modulator, the output of which is connected to the control input of the microwave generator. Technical result - reduction energy costs and exclusion of the possibility physical harm to humans. 2 n.p. f-ly, 1 ill.

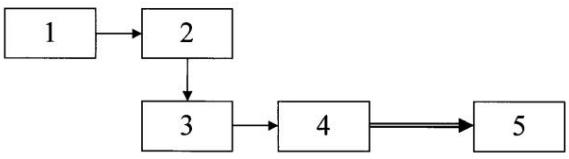

Рис. 1

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(12) **ABSTRACT OF INVENTION**

(21)(22) Application: **2012149537/28, 21.11.2012**

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(54) **METHOD AND DEVICE OF MICROWAVE ELECTROMAGNETIC IMPACT AT TRESPASSER** (57) Abstract: FIELD: electricity.

SUBSTANCE: group of inventions relates to the field of production of mechanical vibrations with the help of electromagnetism and may be used in systems of physical protection of objects from trespassers. The method of microwave electromagnetic impact at a trespasser suggests using an amplitude-modulated microwave electromagnetic field with variable modulation frequency. At the same time frequencies of amplitude modulation are taken in the range of mechanical resonant frequencies of a trespasser's head and separate elements of its acoustic organ, providing for non-lethal pain stimulation. The device of microwave electromagnetic impact at a trespasser comprises a microwave generator with an emitting antenna, an amplitude modulator and a unit of low frequency tuning, made as capable of tuning for mechanical resonant frequency of a trespasser's head and separate elements of its acoustic organs. At the same time the outlet of the low frequency tuning unit is connected to a control input of an amplitude modulator,the output of which is connected to a control input of the microwave generator.

EFFECT: reduced energy inputs and eliminated possibility to injure a person. 2 cl, 1 dwg

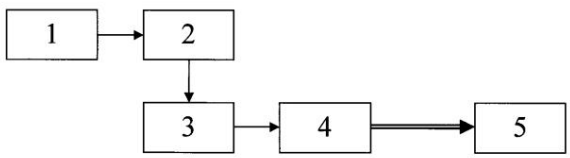

Рис. 1

The invention relates to the field of obtaining mechanical vibrations using electromagnetism and can be used in systems for the physical protection of objects from intruders. A known method and device acoustic impact on the offender [1]. The disadvantage of analogue [1] is the ability to easily counteract violators by using hearing protection, such as earplugs, protective acoustic headphones.

Known "active countermeasures system" - Active Denial System (ADS) made in the USA [2]. The ADS unit emits directed energy in the millimeter wave range, which has a short-term painful thermal effect on people at a distance of up to 500 m. The Active Denial System microwave emitter is based on the conversion of electric current into high-frequency waves using
gyrotron.

The plant is powered by a regular diesel engine of the car, on which has an ADS system or a mobile power plant in a separate trailer. The main disadvantage of this system is the need to create a significant radiated power required for rapid thermal heating of the surface of the human body. Hence - the bulkiness of the installation, including a mobile power plant. The technical result of the invention is to reduce energy costs,

exclusion of the possibility of causing physiological damage to a person and an increase in range compared to the prototype. The set technical result is achieved by the fact that it is proposed to use directional radiation of microwave electromagnetic waves modulated in amplitude. The impact on the violator is carried out due to the occurrence of painful mechanical thermoelastic phenomena in individual elements of the human hearing apparatus at their resonant frequencies. The used effect of direct reception of microwave pulsed electromagnetic radiation is known as the phenomenon of "radio sound" [3, p. 19-34]. The effect of "radio sound" is used for "painless" wireless bionic communication with a person and manifests itself in the form of auditory sensations due to mechanical vibrations excited in the bone and tissue formations of the skull when absorbing the energy of microwave electromagnetic radiation pulses. To implement a painful non-lethal effect on the object, the frequency of amplitude modulation of microwave electromagnetic waves is selected equal to the frequency of resonant bursts of "radio sound".

Resonance phenomena in "radio sound" are due to the size of individual elements of the human hearing aid and are observed in the modulation frequency range of 6...12 kHz [3]. The selection of resonant frequencies of the amplitude modulation of the microwave electromagnetic field makes it possible to achieve the maximum efficiency of non-lethal pain exposure while minimizing the radiated power and the likelihood of risks of causing physiological damage to a person.

Figure 1 shows a block diagram of a device that implements the proposed method of microwave electromagnetic impact on the intruder.

The device of microwave electromagnetic impact on the intruder contains a block low frequency tuning (1), amplitude modulator (2), microwave generator (3), radiating antenna (4), intruder (object of influence) (5).

The device of microwave electromagnetic impact on the intruder works as follows

way. The

signal from the low frequency tuning unit (1), which sets the current value of the modulation frequency, which varies in the range of mechanical resonant frequencies of the head and individual elements of the hearing organs, is fed to the amplitude modulator (2). The amplitude modulator (2) modulates the signal at the output of the microwave generator (3) according to the law specified by the low frequency tuning unit (1). The signal from the microwave generator (3) is fed to the radiating antenna (4), which forms a narrow beam of amplitude-modulated microwave electromagnetic field that acts on the intruder (5), thereby exciting painful sensations in his head and hearing organs. As a result, the intruder will be forced to refuse unauthorized access to the protected object and leave the zone of influence of the modulated microwave field as soon as possible.

Sources of information: 1.

Method and device of acoustic impact on the offender: Pat. RF, No. 2436297: dec. 04/13/2010: publ. 12/20/2011. Authors Shcherbakov G.N., Ancelevich M.A.

2. Defender. Spotlight on National Defense Technolodgies. Volume IV. ISSUE 3. URL: http: //www.raytheon.com/ourcompany/rtnwcm/groups/public/documents/content/defender4_3.pdf (accessed 11/16/2012).

3. Tigranyan R.E. Physical bases of the bionic communication channel on the microwave. M.: IP RadioSoft, 2012. 332 p.

1. A method of microwave

electromagnetic action on an intruder, characterized in that the action is carried out by an amplitude-modulated microwave electromagnetic field with a varying modulation frequency, while the amplitude modulation frequencies are taken in the range of mechanical resonant frequencies of the intruder's head and individual elements of his hearing organ.

2. The device of microwave electromagnetic impact on the intruder, containing
A microwave generator with a radiating antenna, characterized in that an amplitude modulator and a low frequency tuning unit are introduced into it, configured to tune to the mechanical resonant frequency of the intruder's head and individual elements of his hearing organs, while the output of the tuning unit is low
frequency is connected to the control input of the amplitude modulator, the output of which is connected to the control input of the microwave generator.