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(54) Title: ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER

(57) Abstract: The Electronic Lock System of Firearms Trigger receives a long-distance command (remote control), via radio control, to lock the trigger of the weapon, verifies the database if this command is valid and sent by management team and, if so, keeps the trigger locked or locks it, and does not allow unauthorized people make use of the weapon. The Electronic Locking System of Firearms Trigger consists of a transceiver - transmitter / receiver (2), which will receive the command from long- distance lock. The received information will be analyzed by a microcontroller (3) that it will give the permission to make shots. The decision will be sent to a microdrive (4) that, if the user has authorization, or if there is no order of locked, release the trigger (6). If the user has been unauthorized remotely by management team, the trigger (6) will not be released. If the trigger (6) already released and a locked command is sent during use, a decision will be sent from the microcontroller (3) to the microdrive (4), that it will lock the trigger (6) and prevent the user from making new shots.



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“ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER”

This patent refers to an electronic lock system of the firearms trigger, which will be triggered by radio frequency. The competent authorities may, at a distance and safely, block the use of the weapon by users who are in a given
5 circumstance, putting in risk one or more innocent people, or any circumstance that makes necessary the lock, according to the criteria established by these authorities. It permits, therefore greater control of bad use or indiscriminate use of these weapons.

Currently, the firearms have several types of security systems, in an attempt to avoid use by unauthorized persons, or to avoid accidents by improper use.
10 Some types: Percussion lock system integrated to mechanism of firing semi-automatic pistol (patent no. IP 9402252-6 A), screw-lock; lock the stock sheet; screw that locks the trigger; apparatus to compel the trigger lever and hook the latch in a machine pistol (patent no. 9305705-9 A). All these systems are mechanical, be in the weapon and have
15 no key to effective locking against unauthorized use. Therefore, anyone who has knowledge about its use can disable these mechanisms and quickly put the weapon ready to shoot.

There are two systems, including mechanical, using key to lock or unlock: device to lock the trigger of gun (patent no. IP 9503865-5 A) and lock with key.
20 The first uses a compact hollow block, to cloister the trigger, with pins that are set to lock with a key. There are variations of which have alarms attached. The second is a lock located in the grip, next to the hammer, which uses a small key that, when rotated clockwise or anti-time, block or not to use. In some models, this lock appears at the bottom of the cable.

25 Even for the last two systems, if any person has in his possession the key and weapon, nothing can be done to prevent it from unlock them and make shots.

These systems do not offer any kind of security when the person is already with the gun in his hand and ready to make shots. The very serious situations are the assaults involving hostages, kidnapping or those whose protagonists are manic
30 or psychologically disturbed, so they want to kill one or more persons.

All these moments become uncontrollable by the police when there is license to carry firearms. Generally, the police or specialized team arrives late and can do nothing, except trying to stop the aggressor through various technical approaches, or, slaughtered him trying to reach him with one shot. The risk of tragedies is always very high, and is not often happen to innocent loss of life or the actual perpetrators.

The most serious cases are those with free-snipers, ready to kill several people and ultimately come to commit suicide. In such cases the teams Police can do nothing because they do not want to negotiate and tragedy happens in a short time.

In order to solve these problems, it has developed the system of electronic trigger lock, presented in this patent, composed of an electronic microcontroller coupled with a transceiver, which will emit radio signal, so that it can be located and can receive a signal of teams of police equipment or expertise. Upon receiving the signal, the transceiver sends the message to the microcontroller, which resend for linear microdrive, which will move the pin into the trigger and lock, preventing the user to make shots and achieve innocent people.

The lock system consists of a microcontroller that process the information received by the transceiver. The set will be fixed on the stock sheet, the grip of weapon and should be fine enough to not difficult its correct handling. When the information is obtained, send a decision to the linear microdrive to move your pin into the hole in the trigger, which brakes and prevent the trigger movement.

By using this system, anyone can keep your license to carry firearms. However, all this equipments will be controlled remotely by the competent authorities. If there are risks of misuse, the equipment will be located quickly due to their emissions of radio signals and, with a simple transmission of command by those who have this power, lock the use of this weapon and may prevent tragedies in a very effective way.

Another problem that can be quickly resolved is the theft of police's firearms or those of exclusive possession of the Armed Forces. The public authority may have a more effective control of the use of firearms by persons in its service. As an example, military police could use their weapons normally, but when stolen or lost, the people responsible will be contacted for locking the trigger and still could track the location of them.

The system can be placed in almost all the firearms that have trigger and cable that can be hold by one hand, such as rifles, machine guns, manual and automatic rifles, carbines, pneumatic weapons of pre-compressed air, revolvers and pistols automatic and semi-automatic.

5 The components of the electronic device will be electrically powered by a battery plate inserted in the stock sheet, opposite the plate, where they find the handle of the device. This battery will be the largest size possible, next to the size of the stock sheet, similar to those used in cell phones, which provide a battery with more storage.

10 The provision shall of components and battery on slabs of stock sheet not interferes in the use of weapons by people who usually use the right hand or the left to make shots. If the person using the left hand wants, the system can be deployed on the other side of grip.

O system of electronic trigger lock of firearms can be better understood through the following detailed description, in line with the figures Attached, where:

15 The FIGURE 1 represents a partial view of the side of a conventional firearm, which shows primarily the grip and location of invention devices. A schematic drawing was used as a example of a semi-automatic pistol, as a weapon widely used today and have all the necessary requirements for a better understanding.

20 The FIGURE 2 is a three-dimensional design of the trigger of semi-automatic pistols, with location of the hole which the pin will go. The invention was based on this type of trigger, but it may suffer small modifications to be used in other types, such as those in the shape of a hook, without, however, distort the system so relevant.

25 The FIGURE 3 represents a partial view (section A-B) from the top of the gun.

The FIGURE 4 represents a partial view (section C-D) from the back of the gun.

The FIGURE 5 represents a partial view (section E-F) from the front of the gun.

30 Referencing these figures, when they handle the weapon, they hold by the grip (9), which is frame (8), which is the main block, made of steel or synthetic

polymers, which gives way to the weapon. The signs of stock sheet (11) and (12) involving the grip (9) to provide greater comfort and strength in handling the weapon. The board of stock sheet (10) is attached to the grip (9) by the screw (12) and screw (13). The stock sheet (11) is attached to the grip (9) by the screw (14) and screw (15).

5 Almost all components of the system in question are within the board of stock sheet (10), which has thick enough to hold them, because all the components are very thin. It is emphasized that the system does not interfere in the other devices of the weapon and not in the way it is used.

10 By holding the weapon, the user's fingers involve the basement below the grip (9), which is the average, the ring and the minimum. The indicator is used to press the trigger and thumb gives strength to involve the top of the basement grip (9).

15 Part of the pin (5) of linear microdrive (4), when the system is off, will be inserted into the hole (7) of the trigger (6), which will prevent its movement. Because it can not move, the trigger (6) not be able to move the firing trigger (17), which will not disarm the hammer and the shot will not be allowed. In addition, as the trigger (6) and the firing trigger (17) do not move, the system of percussion lock, integrated mechanism for the shooting, will remain activated, which will prevent bolt movement and no shooting will be done.

20 By involving the grip (9), the middle or ring finger will press the small button of pressure (1) that will turn on the system. The microcontroller (3) examine whether the trigger is blocked by pin (5) and if there is any order received by the transceiver - transmitter / receiver (2) to lock the trigger (6). A software is necessary to receive and process the signals received. This type of software accompanying the microcontroller and all is found in the market.

25 The software being used should manage its database to create and modify different types of users with variation for permission to use and also of administrators. It should create more than eight-digit passwords for users, in addition to protecting the confidentiality of information through programs of high-level encryption. The communication between the software of linear microcontroller (4) and the authorized administrator, or even with user of the firearm, can be made through the transceiver - transmitter / receiver (2) or by USB port (20), to connect to a computer.

30

If the trigger (6) is locked by pin (5) and has no record of any order to lock, immediately the microcontroller (3) send a signal to the linear microdrive (4) to move the pin (5) in order out the frame (8) of the firearm. The pin (5) across the frame (8) and the plate of stock sheet (10) and will be withdrawn from the basement which is inserted inside the hole (7) of the trigger (6) when the system is off. When you move, 5 commanded by linear microdrive (4), it will move out of the hole (7), which frees up the trigger (6). To release it, also release all existing systems in weapon. The person authorized, pressing the trigger, can make as many shots as desired.

On the other hand, when connect the system, already exists an order, 10 received by the transceiver (2), to block the trigger (6) of the firearm, the microcontroller (3) not send the signal to the linear microdrive (4). Therefore, the pin (5) remains inside the hole (7) of the trigger (6), which blocks its movement and not allow shots. Alternatively, instead of not sending signals of withdrawal from the pin (5), the microcontroller (3) could send a contrary signal, so the linear microdrive (4) put the 15 pin (5) into the hole (7) of trigger (6). The pin (5) would be stronger, which would prevent even more, any movement of the trigger (6).

If the order to lock arrives after the system call, the microcontroller (3) check this condition and send a signal to linear microdrive (4) to move the pin (5) in order into the weapon. This cross the frame (8) and the plate of stock sheet (10) and 20 insert a hold within its hole (7) of the trigger (6). When you move, commanded by linear microdrive (4), it will go into the hole (7), which locks the trigger (6).

Logically it is not possible for locking during the shot, but the pin intended to continue to try to enter the hole (7) of the trigger (6) and make the lock at the time that the trigger return to their original position - without being pressed. The 25 return for the original position always happens, even just in time to reload the weapon.

The linear microdrive (4) is offered on the market in various shapes and sizes, which facilitate their use in the system. It requires space, part of the plate stock sheet (10) and in part of frame (8). Nevertheless, not interfere in the handling of the weapon to be at the top, next to the trigger (6) and slightly above the magazine catch 30 (16). The linear microdrive (4) should be well set in the frame (8), if possible fastened or incorporated into this, to prevent its forced, withdrawal together with the pin (5),

which would cause discharge of the trigger (6). It is emphasized that the trigger (6) is initially locked when the system is off, which avoids violation of the system by the user, such as damage the electronics or off the system with the withdrawal of the battery (18). We must be avoided, in every way, the release of the trigger (6) and use the weapon for shooting before verification, by the system, if there is a command to lock has been sent remotely.

The system will be electrically powered by a battery (18) plate inserted in the stock sheet (11) opposite the plate stock sheet (10), which contains the other system components. Thus, it may have a sufficient size to be fed by a long period, it is seen that the system will shut down most of the time, it is turned on only when the weapon is in hand and with the pressure mini button (1) pressed by finger. There are several types of batteries in the market and can be designed in accordance with the size and thickness of the stock sheet (11), and can be recharged or exchanged. The connection wire (19) between the battery and other components of the system can pass in the back of the grip (9), behind frame (8) or inside.

For the system is always electrically charged even when the weapon is stored, the battery, which will be rechargeable, may be constantly connected to the power. Thus, the risk of needing the weapon and it is discharged is very low. Remember that if the battery is discharged, the system will not work and the weapon will remain locked.

In addition to this measure of safety, to always keep the battery charged, you can embed in the system a microdyne which will be moved by the displacement caused by the expansion of gases in the shooting, which generate energy and power the battery. The load generated will be small, but it will be sufficient to maintain the system in operation by a small interval of time, until the user can link the weapon to the power and fully recharge the battery.

The electronic system of locking the trigger of firearms is driven via radio frequency by an integrated circuit of radio called transceiver - transmitter / receiver (2). This type of circuit radio is already used commercially and already there are those that support both 2G networks TDMA / AMPS / GSM, as platforms for data of 2.5G GPRS / EDGE at high speed.

This technology becomes very useful because it can be given the remote to lock the trigger (6) through devices that send signals protected, created specifically for the control by responsible teams, from GSM mobile phones or TDMA, or even cell phone networks using overlapping GAIT, which add the capacity GSM and data services to the mobile Internet infrastructure wireless TDMA / AMPS existent. The Internet can also be used, or via mobile phones (GPRS), or by wireless networks ("wifi"), since the transceiver (2) sends and receives radio frequency signals, and both the cellular network as wireless already use this technology, is quite widespread and competitive price, which facilitates its use on a large scale. The equipment have significantly reduced size and can be easily incorporated into the stock sheet of a firearm, and spend very little energy.

Nothing prevents, however, be used any other means enabling the lock at a distance, as via "Bluetooth" or satellite. The "Bluetooth" is being increasingly used in various electronic equipment such as cell phones and their accessories, appliances, sound and image, and also in various appliances. It is actually a cheaper technology, equipment were low and spend little energy. However, its sphere of action is still very restricted, which is around 10 meters. Some reach 100 meters, but at the moment are more expensive, bigger and spend more energy.

The trigger via satellite can also be used and cover a much larger area of control, but the technology is currently more expensive. However, as these technologies are being widely used and refined at intervals of time increasingly short in a few years, if not months, you can compete with the drive radio frequency in price, size and sphere of action. The ideal would incorporate the three systems - radio frequency via "Bluetooth" and satellite, so that gives total control and ability to quickly lock, regardless of where the firearm is.

CLAIMS

1. "ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER",
implanted in the stock sheet (10) of the handle (9) of a semi-automatic pistol,
5 characterized for possessing a mini-button of pressure (1) that, when pressed for the
finger annular from right hand of a person what she secures the arm, turn on the system,
that will be electrically powered by an inserted battery in the opposing stock sheet (11),
so that the microcontroller (3) verifies if it has some lock command received for the
transceiver (2), sent remotely by team that manages it and, in case that negative, will
10 send a signal for the linear microdrive (4) move the pin (5) towards internal to the
external of the handle (9) of firearm and, thus, will be out of the hole (7) of the trigger
(6), that it will release the trigger (6) and consequently will release also all the existing
systems already in the weapon, and the authorized person, pressing the trigger, will be
able to make as many shots as like.
- 15 2. "ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER", in
accordance with claim 1, characterized for using the equipment "Bluetooth" on the
contrary of the transceiver (2) of signals it saw radio frequency, to remotely receives the
command from blockade.
- 20 3. "ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER", in
accordance with claim 1, characterized for using the equipment transceiver of signals
saw satellite" on the contrary of the transceiver (2) of signals it saw radio frequency, to
remotely receives the command from blockade.
- 25 4. "ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER", in
accordance with claim 1, characterized for using the trigger in form of hook in
substitution to the trigger in form of block with puncture (6).
5. "ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER", in
accordance with claim 1, characterized for being implanted in the handle (9) of an
automatic pistol.

6. "ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER", in accordance with claim 1, characterized for being implanted in the handle (9) of a revolver.

5 7. "ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER", in accordance with claim 1, characterized for being implanted in the handle (9) of a machine gun.

8. "ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER", in accordance with claim 1, characterized for being implanted in the handle (9) of a rifle.

10 9. "ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER", in accordance with claim 1, characterized for being implanted in the handle (9) of a sniper rifle or assault rifle.

10. "ELECTRONIC LOCK SYSTEM OF FIREARMS TRIGGER", in accordance with claim 1, characterized for being implanted in the handle (9) of a pneumatic air weapon daily pay-tablet.

FIGURE 1

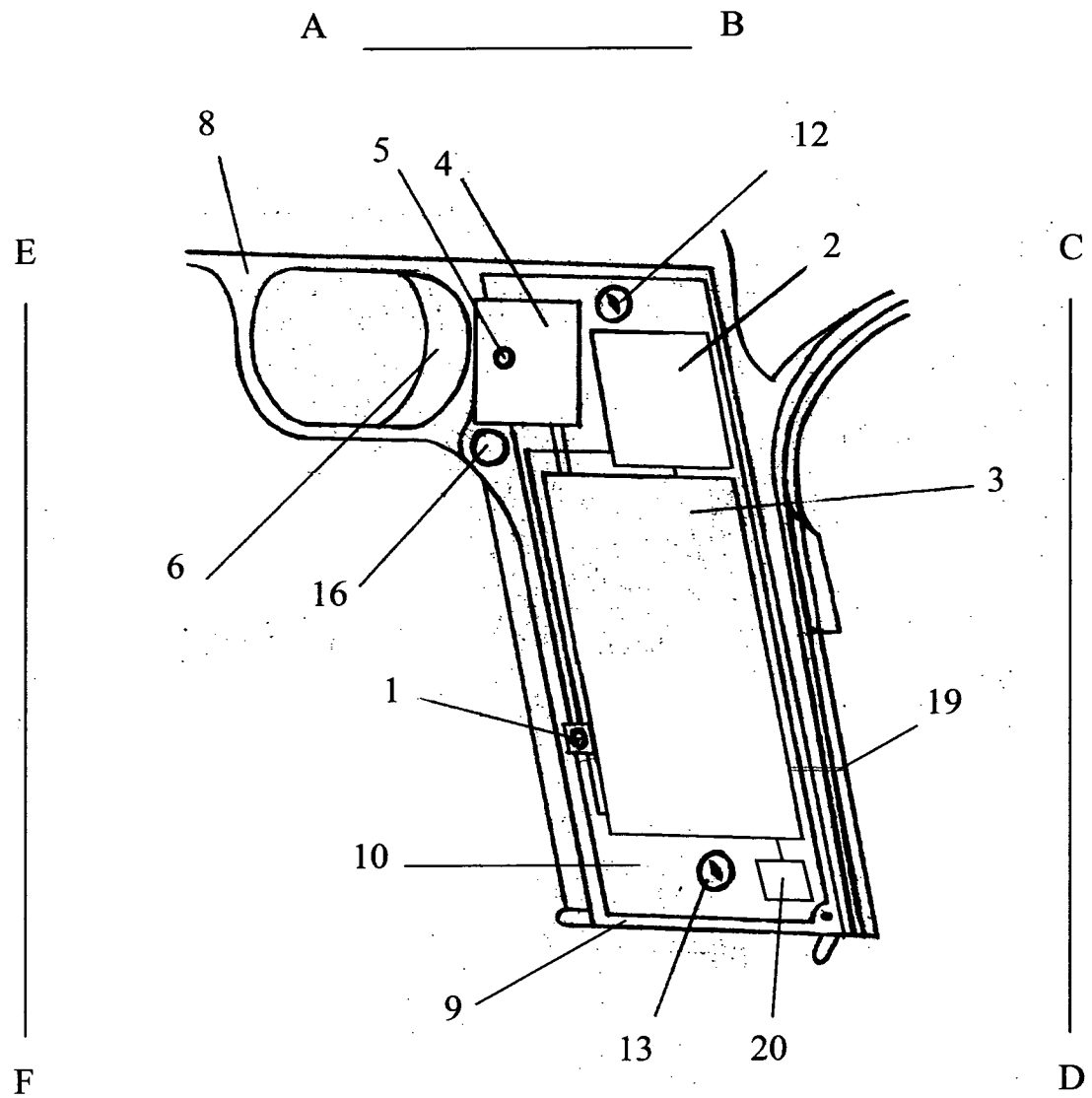


FIGURE 2

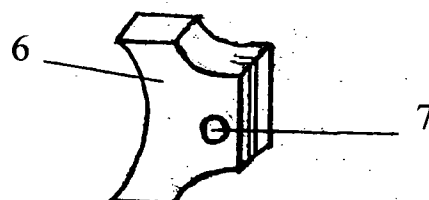


FIGURE 3

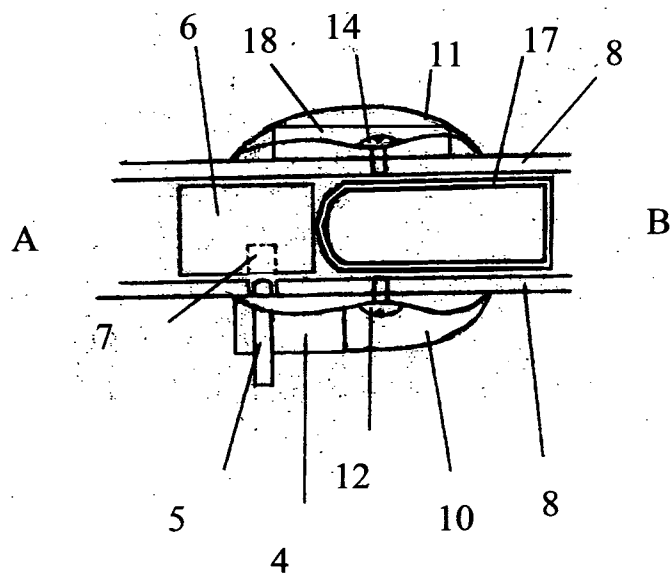


FIGURE 4

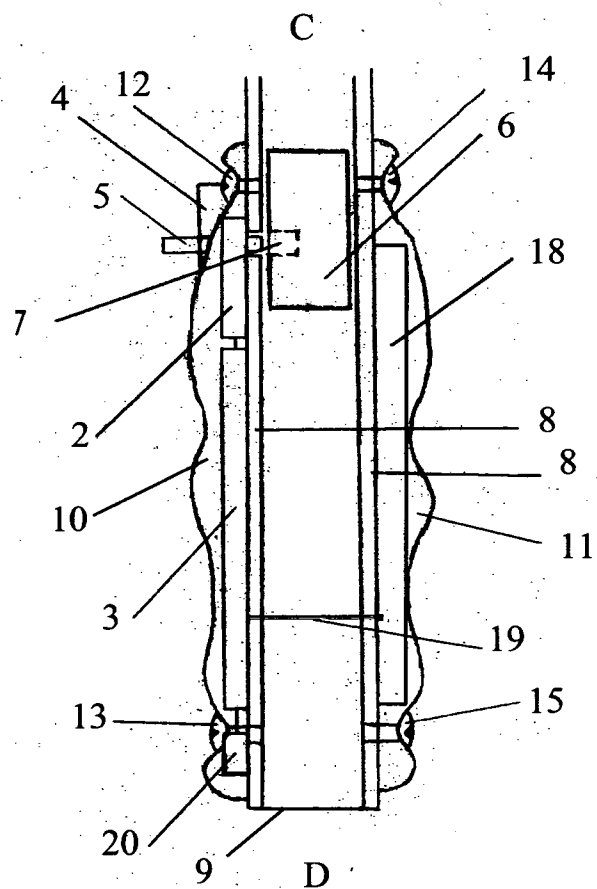


FIGURE 5

