

It's high time to throw burglars idle!

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Modern trends in secure locking indicate that the reliable classic mechanical systems are still relevant, but the challenges of the times are pushing to expand their capabilities through the use of electronics with their inherent event monitoring and auditing capabilities. And this is not just another fashion trend – it is the requirements of the times and the recommendations of the best experts in the security industry...

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<http://www.bezpeka.spv.ua/2016/08/cliq-vip.html>

Almost every second illegal entry into citizens' apartments occurs through front doors by unlocking the locks installed at them, while more noisy methods of criminal entry (with door break) are used by burglars almost 20 times less often (see, for example, <http://www.videogsm.ru/kvartirnie-krazhi.html>).

And not for nothing, the main requirement for door locks in Interstate Standard GOST 5089-2011, *Locks, Latches, and Cylinder Mechanisms – Specifications* is formulated as follows: *The design of mortise and rim locks should be such that at an attempt to unlock them in a destructive way the lock has to withstand and remain operable or be destroyed but so as to exclude entry to the protected space* (Subsection 5.7.4.7 of this standard).

The purpose of any illegal unlocking of mortise locks and rim locks is the unauthorized removal of the bolt of a locked lock out of the strike plate, which is fixed to the door frame and ensures the fixation of the door leaf thereto, using either *brute-force* or *manipulative* methods (see GOST 5089-2011).

Known in the art are a lot of ways to make the crude-force opening methods of such locks more difficult. The most effective of which provide an additional fixation of the bolt to the door frame after it has been inserted into the hole of the strike plate (see for example U.S. Patent 3,919,869 of November 18, 1975). The implementation of this method provides for not a one-sided but rather a two-sided locking of the bolt of a fully closed lock: to the door leaf by the locking mechanism of the lock and to the door frame by the *locking device/blocker* installed in its cavity. As a result, the bolt becomes a *tie*, which prevents effectively the lock from being unlocked both when the locking mechanism is destroyed and in case of an attempt of pushing the door leaf away from the door frame.

The advantages of the method include the fact that it does not require disassembling of the lock (for refining of its secret and/or locking mechanisms) and considerably increases the resistance of the *lock+blocker* locking device to manipulative methods of unlocking since the latter has its own secret mechanism supplementing the secret mechanism of the lock. The secret of the electronically controlled blocker is easier to elevate than that of any mechanical lock unlocked with keys.

Making use of possibilities of modern electronics and mobile communication, *БКФ ХАГ* Ltd has developed a multifunctional locking device (see video presentation <https://www.youtube.com/watch?v=XVaESITbv6s>), which ensures not only the locking of the bolt but also the implementation of a number of additional functions very useful for users. (The appearance of such a device is quite logical, as it was the case, for example, quite recently with mobile phones: from simple devices designed only for exchanging calls and SMS messages, they have quickly developed into smartphones implementing numerous functions very useful for us, the users).

The multifunctional innovative **Lock-security burglar alarm device for doors equipped with a locking bolt** (Ukrainian Patent for an Invention No.112511) was created based on *Device for locking of the bolt of a lock* (Ukrainian Patent for an Invention No. 114136) and is designed to operate with virtually any mechanical locks (including those installed by users at their doors long ago!). While ensuring a reliable locking of mortise locks and rim locks as well as the monitoring of the whole *door+lock* security structure, it is, nevertheless, a low-budget device which is quite affordable to most ordinary citizens.

Additional functions performed by the **Lock-security** device:

1. Monitoring continuously the position of the bolt of the fully closed lock, this making it possible to detect quickly even a small displacement of the lock in the attempt to pick the key and send an appropriate alarm SMS-notice to the mobile phone of the main/principal user whose number has been recorded in the memory of the locking device.
2. Operation with an infrared motion sensor that can be installed near the front door and, in the guard mode, may monitor both the door itself (for example, against opening its leaf with a cutting tool), and the surrounding area / hallway (which allows to detect a burglar who entered the room bypassing the front door, for example, through the window).
3. The indication of the security mode of the *door + lock* protective structure by means of a remote LED indicator mounted at the outer side of the door frame.
4. Operation using an external siren according to a programmatically set algorithm.
5. Operation using an alarm pushbutton, which makes it possible to initiate both a *stealth* alarm (SMS-alarm notice is transmitted only through the cellular network) and "*loud*" alarms with additional siren activation (in order to attract the neighbors' attention and/or scare off an intruder).
6. Control (with the aid of SMS and/or DTMF commands) of the relay output of the locking device, which output is designed for the connection of various actuators thereto.
7. The possibility of the choice of various ways of regular lock unlocking: from simple press on hidden pushbutton to unlocking first by PIN code first (sent as DTMF command from any of the telephones whose numbers are stored in the memory of the device) and then by pre-registered RFID cards or DS fobs.
8. Automatic transition to the emergency unlocking mode when there are problems with power supply, GSM module or mobile communication, as well as with RFID reader developed by *BKΦ XAΓ* Ltd. with returning to the normal mode after these problems have been eliminated.
9. Transmission of SMS notices of the abnormal events with the protective structure, as well as SMS replies to the queries about its current condition to the users' mobile phones

The listed capabilities of the multifunctional **Lock-security** device not only fully meet the requirements of GOST 5089-2011 for *early response locks* (see Section 6.2.5 of the standard), but also significantly exceed them ensuring thereby a successful performance by this device of additional *security* functions (see paragraphs 2 to 5, both inclusive, of the above list), *control* functions (see paragraphs 6 to 8, both inclusive, of the above list), and *information* functions (see paragraph 9 of the above list).

The main thing about the multifunctional Lock-security device:

- **It is protected by a plurality of Ukrainian and Russian patents;**
- **The device operates with virtually any mechanical locks regardless of the year of their manufacture and installation;**
- **Even in case of a simple lock, the secrecy of the locking device can be made so high that it would be virtually impossible to open it by manipulative methods;**
- **The effectiveness of brute-force method of unlocking is reduced thanks to creating a rigid tie "door leaf – lock bolt - door frame";**
- **The device has the functions of early response locks, making it possible to detect even a small bolt displacement (about 1 mm) when the lock is fully closed;**
- **It provides a continuous monitoring of the door leaf against tampering/burglary by means of an infrared motion detector connected to the device;**
- **It ensures the operation using an alarm pushbutton, a siren, an outside-mounted LED, and various actuators connected to the relay output of the blocker;**
- **It transmits SMS notices of abnormal events that occur in the *door + lock* protective structure, as well as SMS replies to queries about the current condition of both the lock and the device itself to the mobile phones whose numbers were entered in the memory of the device.**