

(12) UK Patent Application (19) GB (11) 2487976 (13) A

(43) Date of A Publication

15.08.2012

(21) Application No: 1102490.8

(22) Date of Filing: 12.02.2011

(71) Applicant(s):  
**Mohammad Reza Molany**  
3rd Floor, 14 Hanover Street, Hanover Square,  
LONDON, W1S 1YH, United Kingdom

**Zeinab Abdolzahraei**  
3rd Floor, 14 Hanover Street, Hanover Square,  
LONDON, W1S 1YH, United Kingdom

(72) Inventor(s):  
**Mohammad Reza Molany**  
**Zeinab Abdolzahraei**

(74) Agent and/or Address for Service:  
**Mohammad Reza Molany**  
3rd Floor, 14 Hanover Street, Hanover Square,  
LONDON, W1S 1YH, United Kingdom

(51) INT CL:  
**E05G 1/02** (2006.01) **E05G 1/08** (2006.01)  
**G07F 17/12** (2006.01)

(56) Documents Cited:  
**GB 2456469 A** **EP 1436723 A2**  
**CN 201546572 U** **DE 102006014432 A1**  
**JP 010256674 A**

(58) Field of Search:  
INT CL **E05G, G07F**  
Other: **Online: EPODOC WPI**

(54) Title of the Invention: **Security lockers for mobiles**  
Abstract Title: **A security locker system with fingerprint access control**

(57) A security locker system 1 uses fingerprint recognition for opening lockers 3 and includes a security camera 2 for monitoring access. Preferably a plurality of individually locked lockers 3 are controlled by a common control unit 4 which comprises a finger print scanner 7, LCD screen 5, a first button to enroll a new user and a second button 8 to identify a user and unlock the locker. Particularly the lockers may be sized to accommodate mobile phones or other portable electronics such as laptops and personal digital assistants (pda's). Preferably the LCD screen informs a new user of a vacant locker and stores their fingerprint; upon subsequent unlocking the fingerprint data is preferably erased. An override or reset system may be provided in case of malfunction. Various warnings and alarms may be provided to alert the user to a locker left open, and a limited number of chances to input correct identification may be provided after which they are locked out and an alarm is raised. The lockers may have wheels 9.

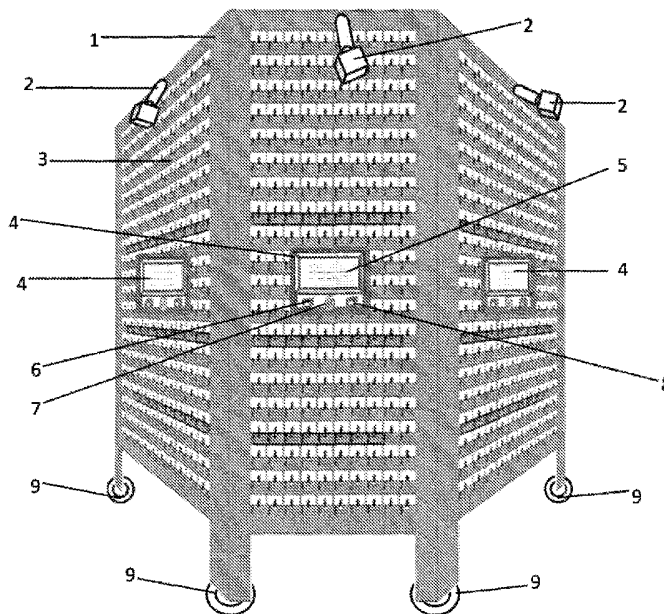


Figure 1

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

GB 2487976 A

Drawings

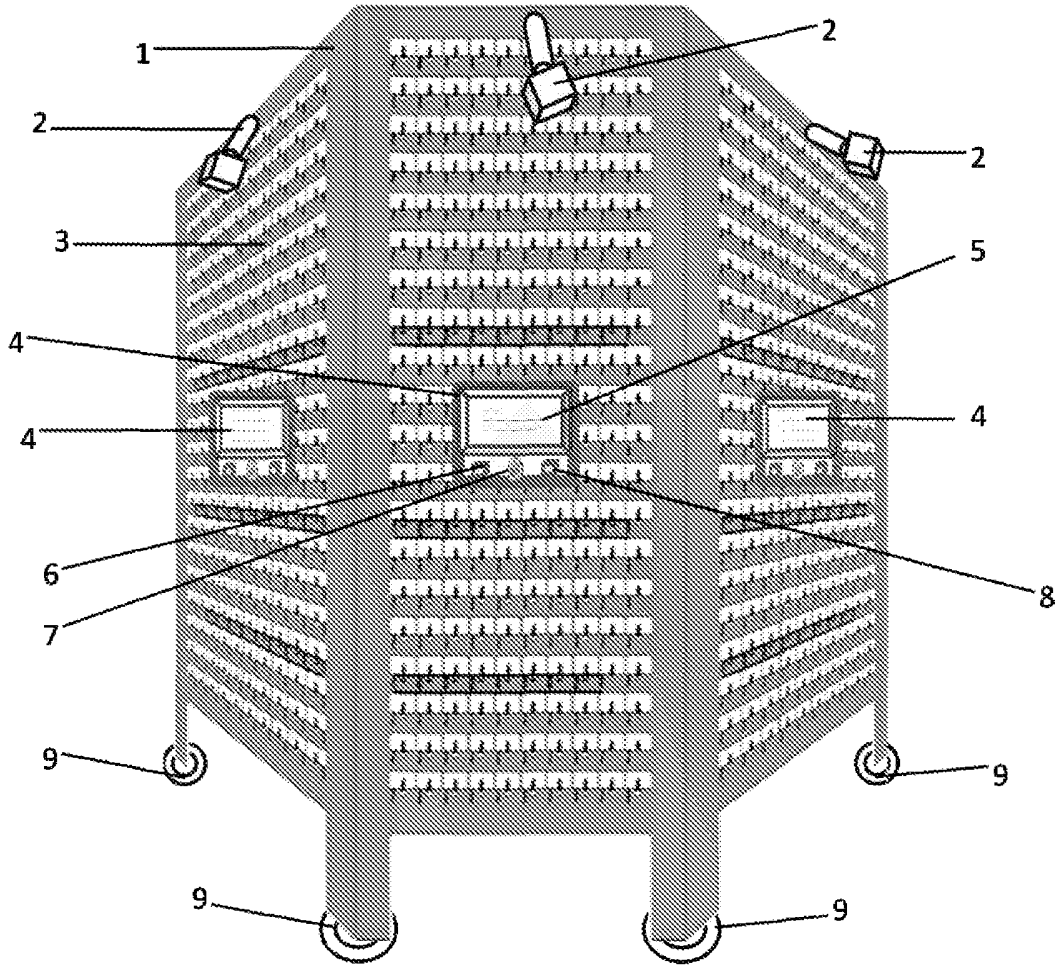


Figure 1

08 03 11

08 03 11

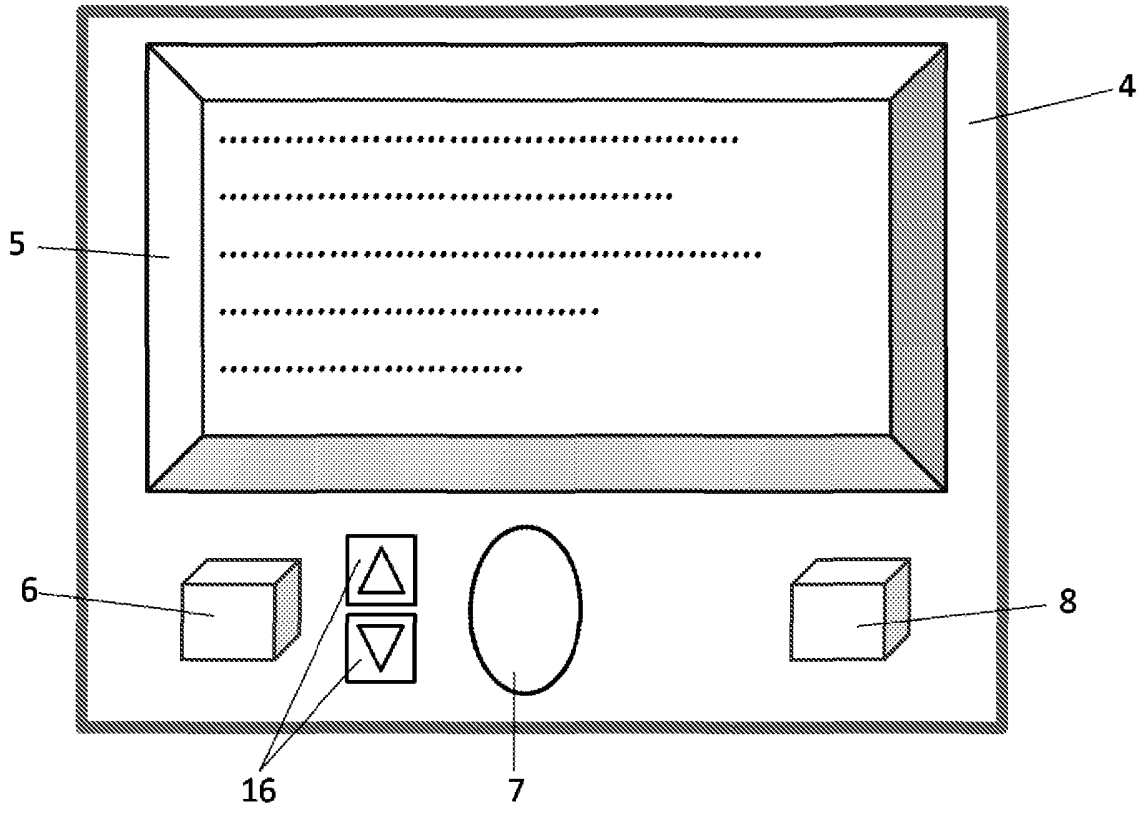


Figure 2

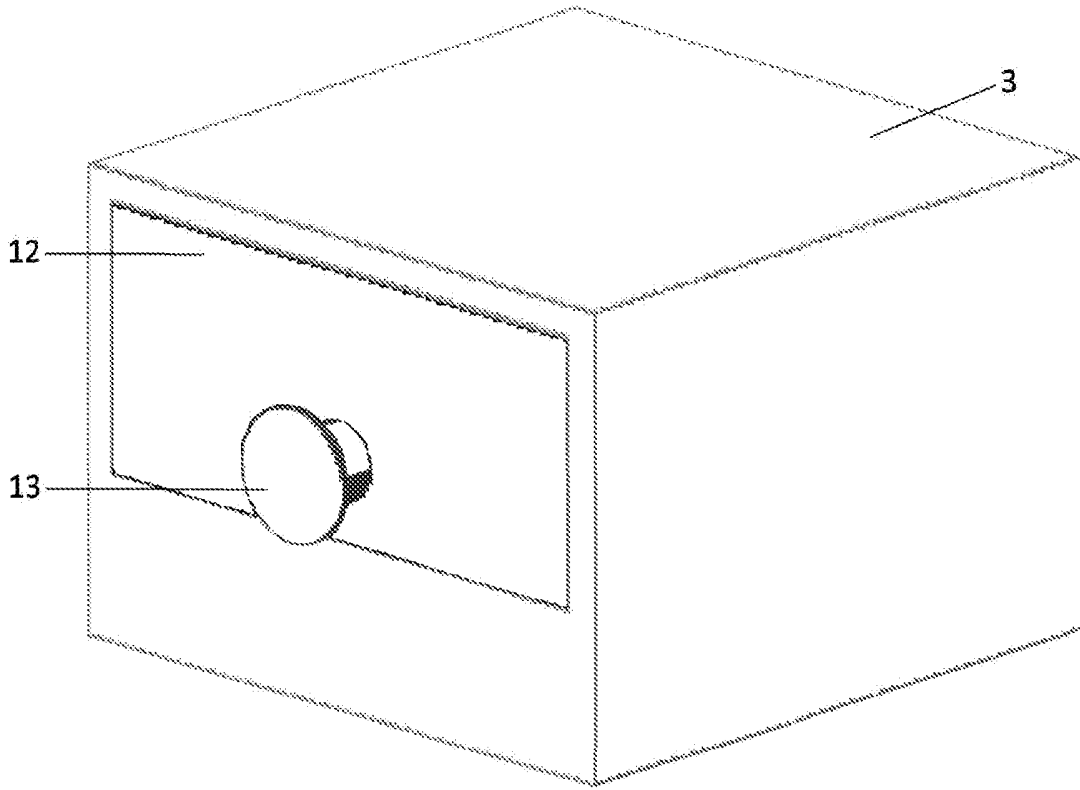


Figure 3

08 03 11

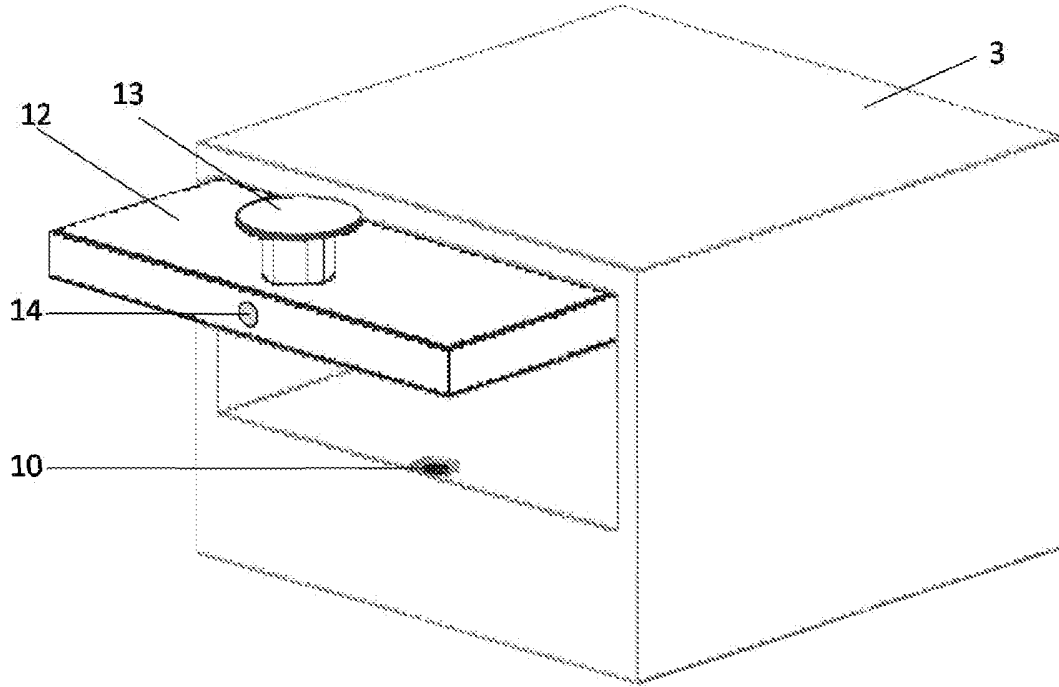


Figure 4

08 03 11

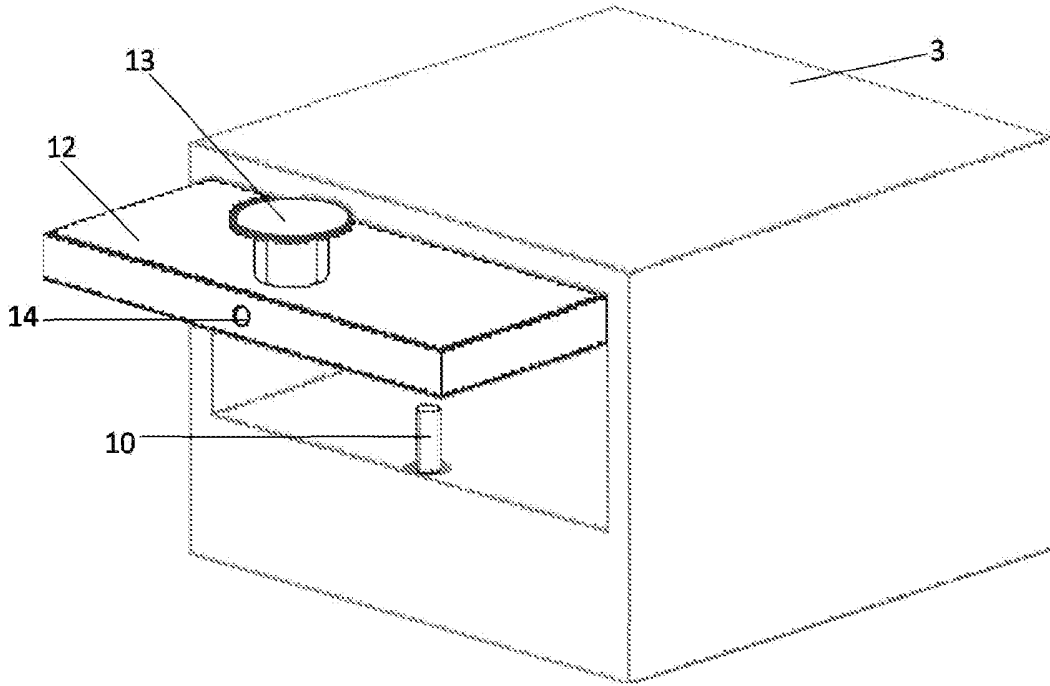


Figure 5

08 03 11

08 03 11

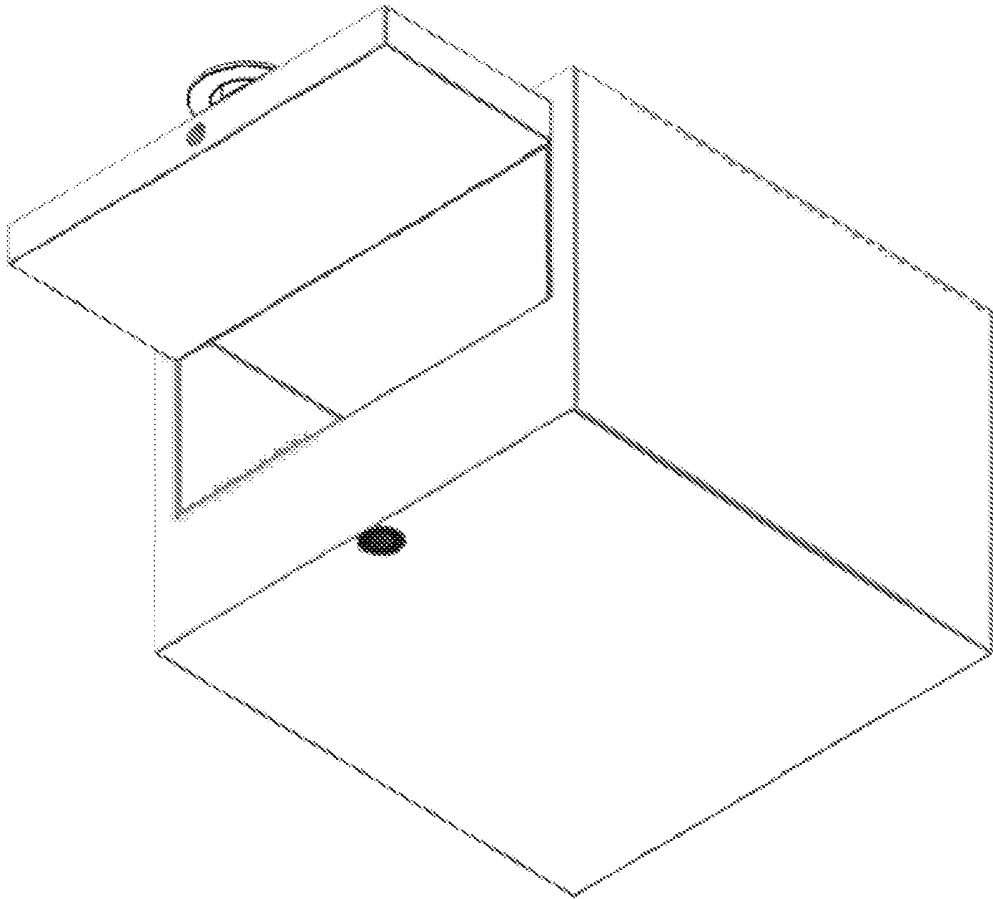


Figure 6

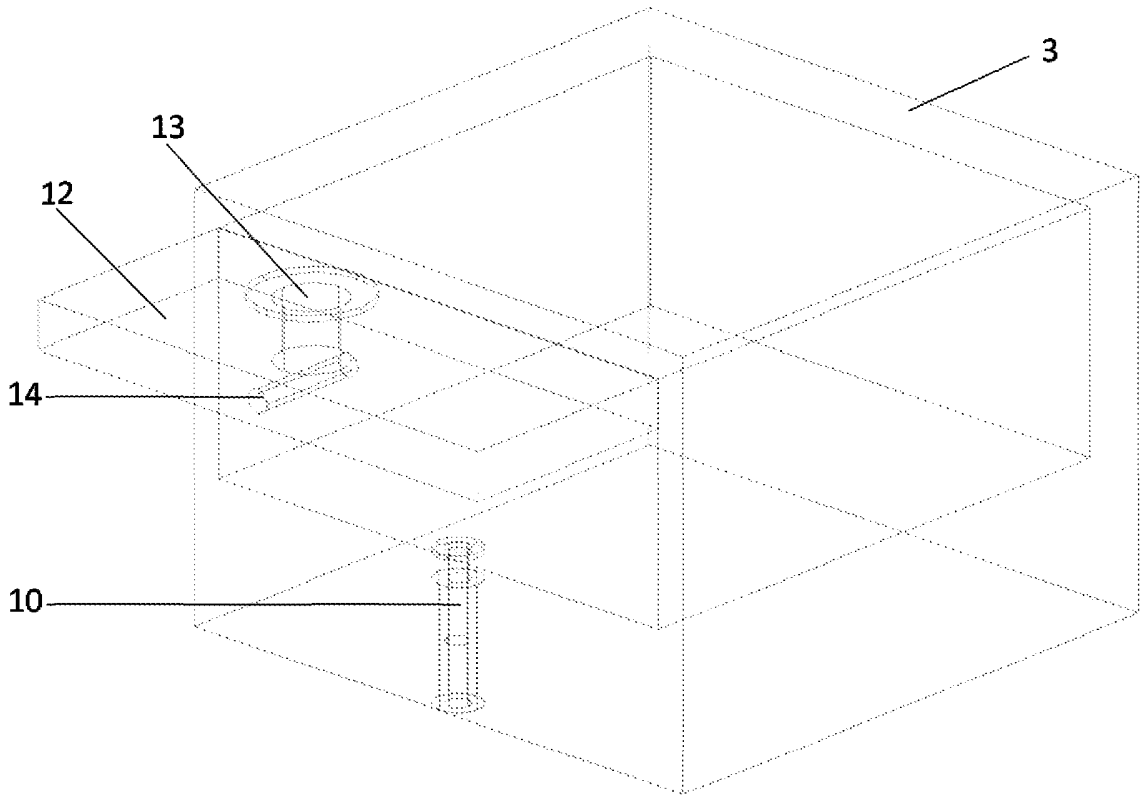


Figure 7

08 03 11



08 03 11

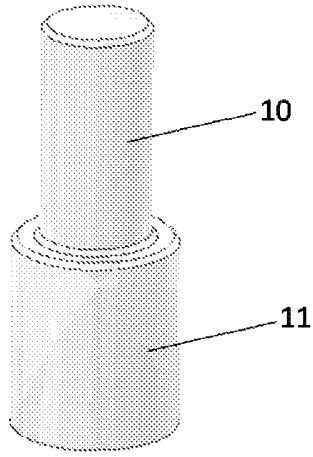


Figure 8

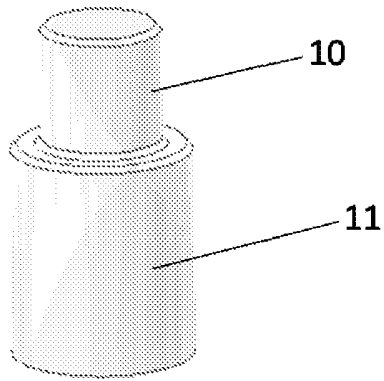


Figure 9

**Title:** Security Lockers for Mobiles

### **Technical Field:**

The current invention refers to security lockers especially designed for storing mobile phones with private security identification systems using fingerprints for each user.

### **Background Information and Prior Art:**

There are many cases where people are asked to keep their belongings including their mobile phones in a specific place before entering a location like swimming pools, cinemas, theatres or attending a certain event or meeting. In these cases, the person is asked to leave their items in a locker or hand them in to staff that will receive and keep them at a safe location.

There are lockers that are designed with strong locks in order to ensure the safety of the items stored. However in many cases, keys may be lost or stolen which threatens the safety of the items stored.

Currently, the existing lockers are not specifically designed for mobiles and there is a need for such systems in many locations such as diplomatic and political meetings as well as many other types of locations where people are not allowed to take their mobile phones in with them.

Shortages of current available lockers or storing options for mobile phones of users when they enter a specific location:

1. Keys may be lost when given to users.
2. The lockers may be cracked open and items can be stolen if keys are used.
3. Current lockers are prone to broken keys as well.
4. When operators are requested to monitor large number of lockers, there is the possibility of Keys that get mixed up.
5. It is difficult to manage a large number of lockers manually.
6. It is very much possible that the keys of lockers may match other lockers as well especially if a place contains a very large number of lockers.
7. The operators must keep copies of keys, store them and maintain a record of the correct matching lockers with the right keys
8. Current lockers designed for various purposes are space consuming due to their large sizes.

## **Statement of the Invention**

The present invention proposes security locker system designed for storing mobile phones, where the security locker uses fingerprints to identify the users instead of using keys, the said security locker system includes a camera at the location of lockers for operators to monitor them.

### **Optional Features:**

The same locker system may be designed in different sizes for the purpose of storing other items such as laptops and other valuables and works in the same way using the fingerprint identification.

### **Advantages of the Invention:**

1. The system is completely automated and does not involve using any type of keys which reduces the hurdles with using keys such as:
  - Loss of keys
  - Breaking of keys
  - Storing of keys and copies of keys
  - Management of a large number of keys
2. Easy management due to the automatic control over them instead of manual
3. Higher security because it is very complicated to crack a fingerprint monitored lock opened as compared to the complication associated with cracking keys.
4. Although specifically designed for mobiles, it can be easily designed for other items depending on the requirements of the users.
5. Because the lockers are designed specifically for storing mobiles or specific items, the locker space is not wasted and a much larger number of lockers can be placed within a certain location compared to large sized non-specific lockers which take a large space.

## **Introduction to the Detailed Description:**

An example of the invention will now be described by referring to the accompanying drawings:

- Figure 1 shows the full view of the security lockers system
- Figure 2 shows a detailed view of the LCD screen and fingerprint scanner
- Figure 3 shows the detailed view of one security locker when it is closed
- Figure 4 shows the detailed view of one security locker when it is open and the screw in its home tube.
- Figure 5 shows the detailed view of one security locker when it is open and the screw out of its home tube
- Figure 6 shows the detailed view of one security locker from a downward direction
- Figure 7 shows the detailed view of one security locker with focus on the locking system
- Figure 8 shows the solenoid screw when it is out of its home tube in the locked state.
- Figure 9 shows the solenoid screw when it is in its home tube in the unlocked state.

## **Detailed Description:**

*Figure 1 to accompany the section below:*

The proposed invention of the security locker system is a locker system designed for safely storing mobile phones in certain mobile restricted locations. The security locker system is designed with locker sizes that are specifically made for mobile phones and works using fingerprint identification instead of keys. It is more secure because it would be more complicated to crack open a system that works using fingerprints as compared to lockers that use keys.

The security locker system 1 can be designed as a permanent locker system installed in a certain location and can also be a portable set of lockers that moves using the wheels 9. Once the lockers1 are placed in the desired location, the wheels 9 are locked to prevent the lockers from moving.

## **Fingerprint Identification of Lockers:**

*Figures 2, 3, 4, 5, 6 and 7 to accompany the section below:*

A fingerprint scanner 4 and LCD screen 5 are installed in the middle of every set of lockers 3 to enrol and identify the users. In the beginning every new user must press the button 6 for opening a vacant locker. The LCD screen 5 will then display a message to inform the user to place his/her finger on the fingerprint reader 7 and will repeat this procedure twice until the user is enrolled and then the LCD 5 displays a message requesting the user to choose the time duration that he wishes to use the locker by pressing button 16 to increase and decrease the duration required. Once the user is enrolled, the processor identifies a vacant locker and the locker 3 is opened. The LCD 5 then displays a message with the number of the vacant locker which is opened and a timing confirmation message then requests the user to place the mobile in the mentioned locker and to close the locker after he is done. If the user does not close the door 12 of the locker after two minutes, an alarm goes to warn the user that his locker 3 is left open.

When the user returns to take his mobile, he must press the second button 8 for fingerprint identification using the fingerprint scanner 4 and if the fingerprint matches the original fingerprint related to a locker, the LCD 5 displays a message with the number of the locker and the related locker is opened. Once the user removes his mobile from the locker, the LCD screen 5 requests the user to close the door 12 with an alarm sound to alert the user that the door 12 is still open. When the user closes the door 12 of a locker 3 after removing his or her item, the machine resets the fingerprint saved with relation to that locker and it is identified as a vacant locker which may be assigned to new users.

If the fingerprint of a user does not match any of the stored fingerprints, the LCD 5 displays a message to try again and the user is given two more chances to place his finger on the scanner 7. If after the total number of trying for three times the scanner 7 fails to identify the fingerprint, the reason is one of the following three possibilities:

1. There is a technical error and the user must contact the operators to fix the problem.
2. The user is new and is unaware of the right method for enrolment, where the system displays a message with instructions for new enrolment.
3. The user is purposely trying to crack open a locker without actually being the owner of the items stored in the lockers in which case, if the user tries to access the machine the fourth time, an alarm goes to alert the operators of the situation.

## **Security of the System:**

The security locker system works only by fingerprint identification of users and each locker 3 will enrol new users and identify them for opening the locker containing their items. Each fingerprint stored will be erased from the memory of the system once the user has taken his items and closed back the locker.

*Figure 8 and 9 to accompany the section below:*

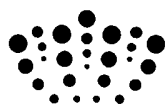
The locker works using solenoid system where the locking screw 10 will usually be inside the opening 14 at the door 12 and this keeps the door 12 locked at all times. Once the user presses the button 8 for opening the right door and places his finger on the scanner 7, if the scanner 7 finds the matching fingerprint stored with regards to a locker, it will directly affect the solenoid system to pull down the screw 10 from the opening in the door and back into its home tube 11, and the locker 3 will be opened. If the locker stays open for a longer period than 1-2 minutes, this will trigger an alarm in the system to notify the user that he must close the locker. When the user closes the door, it will then automatically be locked by the solenoid system which pushes the screw 10 back into the opening 14 of the door 12 which locks the door 12.

*Figure 1 to accompany the section below:*

The security locker system 1 is also monitored with security cameras 2 which can be observed by operators to ensure the safety of items stored in the lockers 3 at all times.

## Claims

1. A security locker system designed for storing mobile phones, where the security locker uses fingerprints to identify the users instead of using keys, the said security locker system includes a camera at the location of lockers for operators to monitor them.
2. A security locker system according to claim 1, where the lockers are mobile and can be moved and adjusted according to different locations using the wheels, the wheels are locked or unlocked manually.
3. A security locker system according to claim 1, where the size of the lockers are designed to be suitable for mobiles and where they can be designed based on the size of the prospective items to be stored.
4. A security locker system according to claim 1, where the locking and unlocking of the lockers is done by fingerprint identification for users.
5. A security locker system according to claim 1, where the processor only saves the user once and erases each user from the memory after a single use, which is after the user has removed his item from the locker and closed the locker.
6. A security locker system according to claim 1, where in every locker a screw enters the opening in the door of the locker using the solenoid system to be locked and gets unlocked upon the identification of the related fingerprint.
7. A security locker system according to claim 1, where the LCD screen displays instruction messages to the user, informing him of the vacant available locker for new users and of the matching locker number for the existing user.
8. A security locker system according to claim 1, where there are two keys one for enrolling a new user and the allocation of a vacant locker and the second key for processing the fingerprint data and identifying the user's fingerprint with the matching locker.
9. A security locker system according to claim 1, where one fingerprint scanner for each set of lockers, the fingerprint scanner is located in the middle of the set.
10. A security locker system according to claim 1, where in the case of technical errors in the system, the operator can reset the system to enable access to the lockers.
11. A security locker system according to claim 1, where in case of leaving the locker open or not fully closed or in the case of forgetting an item inside it, the system alerts the user by an alarm and a message displayed on the LCD.
12. A security locker system according to claim 1, where in the case where the fingerprint is not identified by the scanner, it gives the user two more chances of identification then gets automatically locked and alarms the operator to investigate the reason.



**Application No:** GB1102490.8

**Examiner:** Ben Munns

**Claims searched:** 1-12

**Date of search:** 10 June 2011

**Patents Act 1977: Search Report under Section 17**

**Documents considered to be relevant:**

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-7, 9-12	EP 1436723 A2 (M. A. RIVALTO) see the figures, abstract and page 4 lines 6-15, page 5 lines 12-23, page 7 lines 5-7.
X	1-12	CN 201546572 U (UNIV HUNAN NORMAL) 11.08.2010 (see the figures and WPI Abstract Accession No.: 2010-L23268/63.)
X	1-12	DE 102006014432 A1 (HINZMANN) 04.10.2007 (see the figures and WPI Abstract Accession No.: 2008-C23124/17.)
X	1-12	JP 01256674 A (OMRON TATEISI ELECTRONICS) 13.10.1989 (see the figures and EPODOC Abstract.)
X	1-4, 6-12	GB 2456469 A (PELLETIER) see the figures, abstract and page 11 lines 16-31

**Categories:**

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

**Field of Search:**

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>X</sup> :

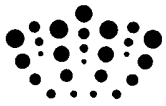
--

Worldwide search of patent documents classified in the following areas of the IPC

E05G; G07F
------------

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI
-------------



**International Classification:**

<b>Subclass</b>	<b>Subgroup</b>	<b>Valid From</b>
E05G	0001/02	01/01/2006
E05G	0001/08	01/01/2006
G07F	0017/12	01/01/2006