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(54) **Title:** ELECTRONIC DEVICE AND MULTI-TYPE AND MULTI-LOCKING METHODS THEREOF

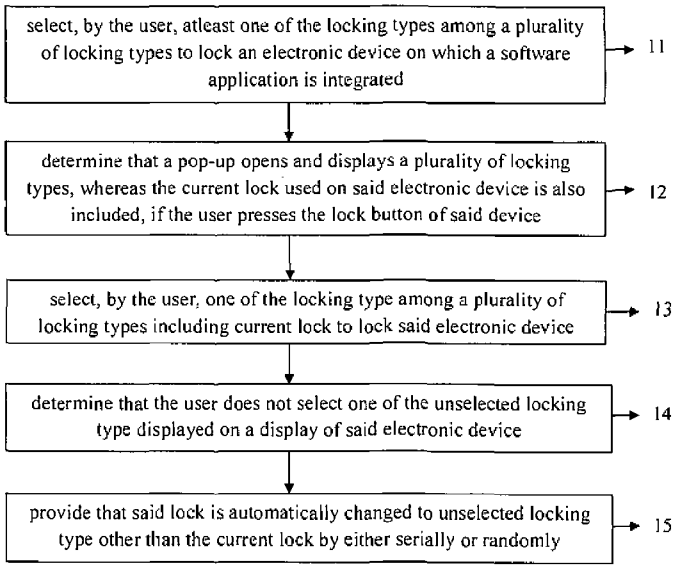

Fig.1

(57) **Abstract:** An electronic device and multi-type and multi-locking methods thereof and computer readable storage medium having stored instructions implemented using methods described thereof are disclosed. The method comprising the step of: selecting, by the user, one of the locking types among a plurality of locking types to lock an electronic device; determining that a pop-up opens and displays a plurality of locking types, whereas the current lock used on said electronic device is also included, if the user presses the lock button of said device; selecting, by the user, one of the locking type among a plurality of locking types including current lock to lock said electronic device; providing that said lock is automatically changed to unselected locking type other than the current lock by either serially or randomly. Corresponding methods are also described thereof.

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TITLE: Electronic device and multi-type and multi-locking methods thereof.

FIELD OF THE INVENTION

The present invention relates to the field of electronic devices. More particularly, the present invention relates to an electronic device, a method of unlocking and locking of an electronic device, an automatic method of unlocking an electronic device and a multi-type and multi-locking method therefor.

BACKGROUND OF THE INVENTION

Nowadays, numerous electronic devices with different locking methods are available namely as pattern, pin, password, finger print, etc., to protect the device. But, there is a high probability of risk in the previous methods that the key a user using to unlock a device can be observed by the other persons and the device can be misused.

One of the prior art CN106529248, discloses an unlocking method and device of a user terminal and the user terminal. The method comprises the following steps of: according to a received unlocking instruction, outputting a jigsaw unlocking interface, wherein the jigsaw unlocking interface comprises a plurality of sub images which are divided by an unlocking image which is determined in advance and are stochastically distributed; receiving a splicing instruction which aims at the plurality of sub images, and moving each sub image in the plurality of sub images to corresponding positions according to the splicing instruction to obtain a spliced image; and judging whether the spliced image is matched with the unlocking image or not, and executing an unlocking operation if the spliced image is matched with the unlocking image. When the embodiment of the invention is implemented, an unlocking way of low difficulty and high applicability can be provided.

Another prior art CN106096359, discloses an unlocking and locking control method and a mobile terminal. The method comprises the following steps of: obtaining the number of characteristic points of the finger of the user in the current feature point set, if the number is less than a first predetermined threshold value, the current when the set of sensing electrode row sensing electrodes X is added to update the current set of feature points, and if the number is greater than or equal to the first predetermined threshold value, then the current feature point set of pre-stored fingerprint template matching is successful unlocking the mobile terminal. The present invention help enhance the speed of a mobile terminal unlocking to thereby enhancing the user experience.

Yet another prior art CN107423589, discloses a password input method and apparatus. Embodiments of the invention provide a password input method and apparatus, which is used for solving the problems that the requirements on equipment hardware conditions are high and a password is easily recorded to be cracked in the prior art. The password input method provided by the embodiment of the invention comprises the steps of displaying at least two password options in a display page, wherein the at least two password options include at least one password option meeting a password generation rule, and the password generation rule is pre-confirmed by a user; and when the user selects the password option meeting the password generation rule, confirming that password input is right. According to the mode, the requirements on the equipment hardware conditions are relatively low, and illegal personnel are prevented from cracking the password by using a keyboard recorder and the like; relatively high exposability and relatively high security are achieved; and in addition, the displayed right password has uncertainty, so that the password cracking difficulty is increased.

Yet another prior art CN105488374, discloses an unlocking method and device. The method comprises the following steps: unlocking a screen according to an unlocking operation of a user; skipping to a first application inner interface according to a pre-configured configuration information, wherein the application

inner interface is other interfaces of the application except the application main interface, and the configuration information is used for representing the first application inner interface. Through the scheme disclosed by the invention, the screen can skip to the corresponding application inner interface only the user performs the action of triggering the screen unlocking, the time required for unlocking the screen, selecting the application, and then entering the application inner interface of the application is greatly shortened, thereby simplifying the operation of the user, and the trivialness of the user operation is reduced.

Another prior art CN106778113, discloses a method and device for unlocking mobile terminal and applications through intelligent wearable equipment. The method comprises the steps that the intelligent wearable equipment detects an unlocking operation on the mobile terminal according to a user operation instruction; an unlocking password input interface is displayed on a user interface of the intelligent wearable equipment; when it is detected that an unlocking password is input in the input interface, a mobile terminal unlocking request carrying the unlocking password and identification of the mobile terminal is sent to the mobile terminal through a cloud server, so that the mobile terminal matches the received unlocking password with an unlocking password stored locally, and the mobile terminal is unlocked when matching succeeds. The unlocking safety of the mobile terminal and the applications can be guaranteed.

From the above description, it is understood that the previous locking and unlocking methods provided only one lock available at a time i.e. the previous lock and key remains constantly for everytime the user locking and unlocking the electronic device. There is a need for different lock methods using multiple locks which is a combination of existing available lock methods like pins, patterns, passwords, fingerprints and gestures and voice command for locking and unlocking of electronic devices.

OBJECT OF THE INVENTION

Accordingly, the primary object of the present invention is to provide methods for performing locking and unlocking of electronic device.

1. The primary object of the present invention is to provide an electronic device installed with multi-type and multi-locking software application which allows the user to lock and unlock the device using a plurality of locking types including PIN, pattern, password, fingerprint and gesture.

2. It is another object of the present invention to provide an electronic device with different locking methods which can be of single lock type or combination of locking types by means of multi-type and multi-locking software application.

SUMMARY OF THE INVENTION

It will be understood that this disclosure is not limited to the particular systems, and methodologies described, as there can be multiple possible embodiments of the present disclosure which are not expressly illustrated in the present disclosure. It is also to be understood that the terminology used in the description is for the purpose of describing the particular versions or embodiments only, and is not intended to limit the scope of the present disclosure.

According to the basic aspect of the present invention, there is provided an electronic device including desktop computer or personal computer, portable laptop computer, tablet and smartphone, by means of an automatic locking application integrated on said electronic device comprising of: a display; a processor configured to select, atleast one of the locking types among a plurality of locking types to lock an electronic device on which a software application is integrated, at the time of locking said electronic device, wherein said software application is a multi-type multi-locking software application. The processer is further configured to determine that a pop-up opens and displays a plurality of locking types, whereas the current lock used on said electronic device, is also included, if the user presses the lock button of said

electronic device. The processor is further configured to: select one of the locking type among a plurality of unselected locking types including current lock type to lock said electronic device, determine that the user does not select one of the locking types among a plurality of unselected locking types including current lock type displayed on said display of said electronic device, provide that said lock is automatically changed to unselected locking type by serially or randomly, upon determining that the user does not select one of the unselected locking type displayed on a display of said electronic device.

According to an another aspect of the present invention, there is provided an electronic device, by means of an automatic locking application integrated on said electronic device comprising: a processor configured to provide an automatic lock operation of an electronic device, when the screen is being turned off or being out from running data and determining that the user does not select any of the locking type displayed on a display of an electronic device, whereas the running data including applications, files such as audios, videos, images, documents and the folders of said electronic device; determine that lock is automatically changed to unselected-locking type, whereas said unselected-locking type is pattern 2 if the user currently using pattern 1.

According to yet another aspect of the present invention, there is provided an electronic device, by means of a multi-type multi-locking application integrated on said electronic device, comprising: a processor configured to: provide a display screen that includes one or more options to select a lock, the one or more options including a display of showing more than one patterns, more than one PINs and more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands; select, by the user, atleast one or more than one combination of all the locking types provided on said display screen, among a plurality of locking-method types including more than one patterns, more than one PINs, more than one passwords, more than one fingerprints, more than one gestures and more than one voice commands thereof, wherein current locking method type is not allowed to set a locking type on said electronic device.

Furthermore, said display including a screen having one or more options to select a lock, by the user, wherein said lock is of either single type lock or customized combined lock type which is predefined by the user. The customized combined lock type is any combination of the available lock methods such as one fingerprint and two patterns or one fingerprint, one password and two PINs which are pre-stored in said application database. The user can be allowed to lock the applications, files such as audios, videos, images, documents and the folders of said electronic device, by means of single type lock or combined type lock or customized combined lock type which is predefined by the user.

BRIEF DESCRIPTION OF THE ACCOMPANYING DRAWINGS

The above set forth and other features of the invention are made more apparent in the ensuring detailed description of the invention, when read in conjunction with the accompanying drawings, wherein:

Fig. 1 illustrates a flow diagram of unlocking and locking method of an electronic device, by the user, by manually, according to the present invention.

Fig. 2 illustrates a flow diagram of automatic locking method of an electronic device, by means of single lock type, according to the present invention.

Fig. 3 illustrates a flow diagram of automatic locking method of an electronic device, by means of combined or customized lock type, according to the present invention.

Fig. 4 illustrates a flow diagram of multi-type multi-locking method of an electronic device, according to the present invention.

Fig. 5 illustrate a block diagram of an electronic device including display and screen, according to the present invention.

Fig. 5A illustrates the schematic representation of the electronic device including display with the list of options to lock and providing that the user selecting the screen lock option, according to the present invention.

Fig. 5B illustrates the list of options showing different locking types including single lock, combined lock and customized combined lock and providing that user selecting the single lock, according to the present invention.

Fig. 5C illustrates a list of options showing a plurality of locks, according to the present invention.

Fig. 5D illustrates a display showing list of options for entering number of locks, according to the present invention.

Fig. 5E-G illustrates the display screens for entering the number of PINS, according to the present invention.

Fig. 5H illustrates the display screen for providing confirmation of the lock, according to the present invention.

DETAILED DESCRIPTION OF INVENTION WITH REFERENCE TO THE ACCOMPANYING DRAWINGS

The preferred embodiment of the present invention will now be explained with reference to the accompanying drawings. It should be understood however that the disclosed embodiments are merely exemplary of the invention, which may be embodied in various forms. The following description and drawings are not to be construed as limiting the invention and numerous specific details are described to provide a thorough understanding of the present invention, as the basis for the claims and as a basis for teaching one skilled in the art how to make and/or use the invention. However in certain instances, well-known or conventional details are not described in order not to unnecessary obscure the present invention in detail.

With reference to the figure 1, the invention is illustrated as applied to, a flow diagram of unlocking and locking method (10) of an electronic device, by the user, by manually, comprising the steps of: selecting (10), by the user, atleast one of the locking types among a plurality of locking types to lock an electronic device on

which a software application is integrated, at the time of locking said electronic device, wherein said software application is a multi-type multi-locking software application; determining (11) that a pop-up opens and displays a plurality of locking types, whereas the current lock used on said electronic device, by the user, is also included, if the user presses the lock button of said electronic device; selecting (12), by the user, one of the locking type among a plurality of locking types including current lock to lock said electronic device, whereas a plurality of locking types is pre-stored in an application database, a plurality of locking types including either more than one PINs or more than one passwords or more than one patterns or more than one fingerprints or more than one gestures and more than one voice commands; determining (13) that the user does not select one of the locking types among a plurality of locking types including current lock displayed on a display of said electronic device; providing (14), that said lock is automatically changed to unselected locking type other than the current lock by either serially or randomly, upon determining that the user does not select one of the unselected locking type displayed on a display of said electronic device.

In one embodiment of the present invention, there is provided a combination of all locking types including either more than one PINs or more than one passwords or more than one patterns or more than one fingerprints or more than one gestures and more than one voice commands. If the user selects the combined lock, the screen or pop-up will be opened to enter the number of locks. Here, assuming that the user is entering the number of locks as 3. By clicking Ok, the next screen or POP-up will be opened to select the lock type for lock 1 from a list of lock types.

With reference to the figure 2&3, the invention is illustrated as applied to, an automatic locking methods (20,30) of an electronic device (100), by means of single and combined type locks, comprising the steps of: providing (21) an automatic lock operation of an electronic device (100), when the display screen (50) is being turned off or being out from running data and determining (22) that the user does not select any of the locking type displayed on a display (60) of an electronic device (100), whereas the running data including applications, files such as audios, videos, images,

documents and the folders. A plurality of locking types including more than one patterns or more than one PINs or more than one passwords or more than one fingerprints or more than one gestures or more than one voice commands pre-stored in an application database is executed. The lock is automatically changed to unselected locking type by either serially or randomly is determined, whereas said unselected locking type is either pattern 2 or pattern 3, depending on order of setting of different patterns in said application database, if the user currently using pattern 1.

In one embodiment of the present invention, the method (30) including the step of: providing (31) an automatic lock operation of said electronic device (100), when the screen (50) is being turned off or being out from the running data and determining that the user does not select any of the locking type displayed on a display of said electronic device (100), whereas the running data including applications, files such as audios, videos, images, documents and the folders; determining (32) that lock is automatically changed to unselected locking type by either serially or randomly, whereas said unselected-locking type is either of pattern lock or password lock or fingerprint lock or gesture lock or voice command lock, depending on order of setting of a plurality of different locking types in said application database, if the user currently using PIN lock.

With reference to the figure 4, the invention is illustrated as applied to, a flow diagram of a multi-type multi-locking method (40) of an electronic device (100), comprising the steps of: providing (41), by a multi-type multi-locking software application integrated on an electronic device (100), a display screen (50) that includes one or more options to select a lock, the one or more options including a display of showing more than one patterns, more than one PINs, more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands. A plurality of the locking method types including more than one patterns, more than one PINs and more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands is created thereof. Atleast one or combination of any of the locking types provided on said display screen, among a plurality of locking-method types including more than one patterns, more than one

PINs, more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands is selected (42), wherein current locking type is not allowed to set a locking type on said electronic device (100).

With reference to the figures 5A-5H, illustrates the schematic representation of the electronic device (100) including display (60) and screens (50) showing the list of options with different locking types including single lock, combined lock and customized combined lock, according to the present invention, comprising a display (60); a processor (70), by means of unlocking and locking application integrated on said electronic device (100), configured to: select, by the user, atleast one of the locking types among a plurality of locking types to lock an electronic device on which a software application is integrated, at the time of locking said electronic device, wherein said software application is a multi-type multi-locking software application; determine that a pop-up opens and displays a plurality of locking types, whereas the current lock used on said electronic device (100), is also included, if the user presses the lock button of said electronic device (100); select, by the user, one of the locking type among a plurality of unselected locking types including current lock type to lock said electronic device; determine that the user does not select one of the locking types among a plurality of unselected locking types including current lock type displayed on said display of said electronic device; provide that said lock is automatically changed to unselected locking type by serially or randomly, upon determining that the user does not select one of the unselected locking type displayed on a display of said electronic device.

In one embodiment of the present invention, a processor (70) is further configured to: by means of an automatic locking application integrated on said electronic device (100), provide an automatic lock operation of an electronic device (100), when the screen (50) is being turned off or being out from running data and determining that the user does not select any of the locking type displayed on a display (60) of an electronic device (100), whereas the running data including applications, files such as audios, videos, images, documents and the folders of said electronic device (100).

The lock that is automatically changed to unselected-locking type is determined, whereas said unselected-locking type is pattern 2 if the user currently using pattern 1.

In another embodiment of the present invention, a processor (70) is further configured to, by means of a multi-type multi-locking application integrated on said electronic device, provide a display screen (50) that includes one or more options to select a lock, the one or more options including a display of showing more than one patterns, more than one PINs and more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands; select, by the user, atleast one or more than one combination of all the locking types provided on said display screen, among a plurality of locking-method types including more than one patterns, more than one PINs, more than one passwords, more than one fingerprints, more than one gestures and more than one voice commands thereof, wherein current locking method type is not allowed to set a locking type on said electronic device (100).

Furthermore, said display (60) including a screen (50) having one or more options to select a lock, by the user, wherein said lock is of either single type lock or customized combined lock type which is predefined by the user. The customized combined lock type is any combination of the available lock methods such as one fingerprint and two patterns or one fingerprint, one password and two PINs, which is pre-stored in said application database. Moreover, the electronic device (100), including desktop computer or personal computer, portable laptop computer, smart phone and tablet, integrated with multi type multi locking application of the present invention, which can be used for allowing the user to lock the applications, files such as audios, videos, images, documents and the folders of said electronic device (100), by means of single type lock or combined type lock or customized combined lock type which is predefined by the user.

The exemplary embodiments also provide a non-volatile computer-readable storage medium containing instructions, such as the memory (80) containing instructions which may be executed by the processor (70) of the unlocking methods (10-40) to perform the above methods as described in FIGS 1-4. For example, the non-volatile

computer-readable storage medium may be a ROM, a RAM, a CD-ROM, a tape, a floppy disc, an optical data storage device or the like.

There is provided a non-volatile computer-readable storage medium storing instructions therein, which when executed by the processor of the electronic device (100) to perform at least one of the unlocking methods described in FIGS 1-4.

Although the present invention has focused mainly on lock screen of electronic device, the invention is not limited to any particular application. The present invention could also be applied for allowing the user to lock the applications, files such as audios, videos, images, documents and the folders of said electronic device known to those skilled in the art.

It is emphasized that the Abstract of the Disclosure is provided to allow a reader to quickly ascertain the nature of the technical disclosure. It is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims. In addition, in the foregoing Detailed Description, it can be seen that various features are grouped together in a single embodiment for the purpose of streamlining the disclosure. This method of disclosure is not to be interpreted as reflecting an intention that the claimed embodiments require more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive subject matter lies in less than all features of a single disclosed embodiment. Thus the following claims are hereby incorporated into the Detailed Description, with each claim standing on its own as a separate embodiment. In the appended claims, the terms "including" and "in which" are used as the plain-English equivalents of the respective terms "comprising" and "wherein," respectively. Moreover, the terms "first,""second," "third," and so forth, are used merely as labels, and are not intended to impose numerical requirements on their objects.

Without further description, it is believed that one of ordinary skill in the art can, using the preceding description and the illustrative examples, make and utilize the present invention and practice the claimed methods. It should be understood that the foregoing discussion and examples merely present a detailed description of

certain preferred embodiments. It will be apparent to those of ordinary skill in the art that various modifications and equivalents can be made without departing from the spirit and scope of the invention.

Claims :

1. An unlocking and locking method (10) of an electronic device (100), by the user, by manually, the method comprising the steps of:

selecting (11), by the user, atleast one of the locking types among a plurality of locking types to lock an electronic device on which a software application is integrated, at the time of locking said electronic device (100), wherein said software application is a multi-type multi-locking software application;

determining (12) that a pop-up opens and displays a plurality of locking types, whereas the current lock used on said electronic device, by the user, is also included, if the user presses the lock button of said electronic device;

selecting (13), by the user, one of the locking type among a plurality of locking types including current lock to lock said electronic device;

determining (14) that the user does not select one of the locking types among a plurality of locking types including current lock displayed on a display of said electronic device;

providing (15), that said lock is automatically changed to unselected locking type other than the current lock by either serially or randomly, upon determining that the user does not select one of the unselected locking type displayed on a display of said electronic device.

2. The unlocking and locking method (10) of an electronic device (100) as claimed in claim 1, comprising the steps of: selecting, by the user, one of the locking type among a plurality of locking types to lock said electronic device comprising the pre-storing of a plurality of locking types in an application database, a plurality of locking types including either more than one PINs or more than one passwords or more than one patterns or more than one fingerprints or more than one gestures and more than one voice commands and combination of all locking types thereof.

3. An automatic locking method (20) of an electronic device (100), by means of single type lock, the method comprising the steps of:

providing (21) an automatic lock operation of an electronic device (100), when the display screen (50) is being turned off or being out from running data and determining that the user does not select any of the locking type displayed on a display (60) of an electronic device (100), whereas the running data including applications, files such as audios, videos, images, documents and the folders.

determining (22) that lock is automatically changed to unselected locking type by either serially or randomly, whereas said unselected locking type is either pattern 2 or pattern 3, depending on order of setting of different patterns in said application database, if the user currently using pattern 1;

4. The automatic locking method of an electronic device (100) as claimed in claim 3, the method comprising the step of:

providing automatic lock operation of an electronic device (100) comprises of executing a plurality of locking types including more than one patterns or more than one PINs or more than one passwords or more than one fingerprints or more than one gestures or more than one voice commands pre-stored in an application database.

5. An automatic locking method (30) of an electronic device (100), by means of customized combined lock, the method comprising the steps of:

providing (31) an automatic lock operation of said electronic device (100), when the screen (50) is being turned off or being out from the running data and determining that the user does not select any of the locking type displayed on a display of said electronic device (100), whereas the running data including applications, files such as audios, videos, images, documents and the folders.

determining (32) that lock is automatically changed to unselected locking type by either serially or randomly, whereas said unselected-locking type is either of pattern lock or password lock or fingerprint lock or gesture lock or voice command lock,

depending on order of setting of a plurality of different locking types in said application database, if the user currently using PIN lock.

6. A multi-type multi-locking method (40) of an electronic device (100), the method comprising the steps of:

providing (41), by a multi-type multi-locking software application integrated on an electronic device (100), a display screen (50) that includes one or more options to select a lock, the one or more options including a display of showing more than one patterns, more than one PINs, more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands.

selecting (42), by the user, atleast one or combination of any of the locking types provided on said display screen, among a plurality of locking-method types including more than one patterns, more than one PINs, more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands wherein current locking type is not allowed to set a locking type on said electronic device (100).

7. The multi-type multi-locking method (40) of an electronic device (100) as claimed in claim 6, the method comprising:

providing said display screen (50) that includes one or more options including more than one patterns, more than one PINs, more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands comprising the creating of a plurality of the locking method types including, by the user, more than one patterns, more than one PINs and more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands thereof.

8. A non-transitory computer-readable storage medium having stored therein instructions that, which when executed by one or more processors of an electronic device (100), implemented using an unlocking and locking method (10) of an electronic device (100), by the user, by manually, which is configured to:

select, by the user, atleast one of the locking types among a plurality of locking types to lock an electronic device on which a software application is integrated, at the time of locking said electronic device, wherein said software application is a multi-type multi-locking software application;

determine that a pop-up opens and displays a plurality of locking types, whereas the current lock used on said electronic device (100), by the user, is also included, if the user presses the lock button of said electronic device;

select, by the user, one of the locking type among a plurality of locking types including current locking type to lock said electronic device;

determine that the user does not select one of the locking types among a plurality of locking types including current lock type displayed on a display of said electronic device;

provide that said lock is automatically changed to unselected locking type other than current lock type either by serially or randomly, upon determining that the user does not select one of the unselected locking type displayed on a display of said electronic device.

9. A non-transitory computer-readable storage medium having stored therein instructions that, which when executed by one or more processors of an electronic device (100) , by means of single lock type, implemented using an automatic locking method (20) of an electronic device (100) to:

provide an automatic lock operation of an electronic device (100), when the screen is being turned off or being out from running data and determining that the user does not select any of the locking type displayed on a display of an electronic device, whereas the running data including applications, files such as audios, videos, images, documents and the folders.

determine that lock is automatically changed to unselected locking type other than the current lock type by serially or randomly, whereas said unselected locking type is

either pattern 2 or pattern 3, depending on order of setting of different patterns in said application database, if the user currently using pattern 1.

10. A non-transitory computer-readable storage medium having stored therein instructions that, which when executed by one or more processors of an electronic device, by means of customized combined lock type, implemented using an automatic locking method (30) of an electronic device (100) to:

provide an automatic lock operation of said electronic device (100), when the screen is being turned off and determining that the user does not select any of the locking type displayed on a display of said electronic device;

determine that lock is automatically changed to unselected-locking type other than the current lock type by serially or randomly, whereas said unselected-locking type is either of pattern lock or password lock or fingerprint lock or Gesture lock or voice lock, depending on order of setting of a plurality of different locking types in said application database, if the user currently using PIN lock.

11. A non-transitory computer-readable storage medium having stored therein instructions that, which when executed by one or more processors of an electronic device, using a multi-type multi-locking method (40) of an electronic device (100) to:

provide a display screen (50) that includes one or more options to select a lock, the one or more options including a display of showing more than one patterns, more than one PINs, more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands;

select, by the user, atleast one or combination of all the locking types provided on said display screen, among a plurality of locking-method types including more than one patterns, more than one PINs, more than one passwords, more than one fingerprints, more than one gestures and more than one voice commands thereof, wherein current locking type is not allowed to set a locking type on said electronic device (100).

12. An electronic device (100), comprising:

a display (60);

a processor (70);

a memory (80) storing an instruction executable by said processor (70);

wherein said processor (70), by means of unlocking and locking application integrated on said electronic device (100), configured to:

select, by the user, atleast one of the locking types among a plurality of locking types to lock an electronic device on which a software application is integrated, at the time of locking said electronic device, wherein said software application is a multi-type multi-locking software application;

determine that a pop-up opens and displays a plurality of locking types, whereas the current lock used on said electronic device, is also included, if the user presses the lock button of said electronic device;

select, by the user, one of the locking type among a plurality of unselected locking types including current lock type to lock said electronic device;

determine that the user does not select one of the locking types among a plurality of unselected locking types including current lock type displayed on said display of said electronic device;

provide that said lock is automatically changed to unselected locking type by serially or randomly, upon determining that the user does not select one of the unselected locking type displayed on a display of said electronic device.

13. The electronic device (100) as claimed in claim 12, further comprising:

a processor (70), by means of an automatic locking application integrated on said electronic device (100), configured to:

provide an automatic lock operation of an electronic device, when the screen is being turned off or being out from running data and determining that the user does not select any of the locking type displayed on a display of an electronic device, whereas

the running data including applications, files such as audios, videos, images, documents and the folders of said electronic device;

determine that lock is automatically changed to unselected-locking type, whereas said unselected-locking type is pattern 2 if the user currently using pattern 1.

14. The electronic device as claimed in claim 12, further comprising:

a processor, by means of a multi-type multi-locking application integrated on said electronic device, configured to:

provide a display screen (50) that includes one or more options to select a lock, the one or more options including a display of showing more than one patterns, more than one PINs and more than one passwords, more than one fingerprints, more than one Gestures, more than one voice commands;

select, by the user, atleast one or more than one combination of all the locking types provided on said display screen, among a plurality of locking-method types including more than one patterns, more than one PINs, more than one passwords, more than one fingerprints, more than one Gestures and more than one voice commands thereof, wherein current locking method type is not allowed to set a locking type on said electronic device.

15. The electronic device (100) as claimed in preceding claims 12-14, comprising said display (60) including a screen (50) having one or more options to select a lock, by the user, wherein said lock is of either single type lock or customized combined lock type which is predefined by the user.

16. The electronic device (100) as claimed in preceding claims 12-15, wherein said customized combined lock type is any combination of the available lock methods such as one fingerprint and two patterns or one fingerprint, one password and two PINs, which is pre-stored in said application database.

17. The electronic device (100) integrated with multi type multi locking application as claimed in preceding claims 12-16, which can be used for allowing the user to lock

the applications, files such as audios, videos, images, documents and the folders of said electronic device, by means of single type lock or combined type lock or customized combined lock type which is predefined by the user.

18. The electronic device (100) as claimed in preceding claims 12-17, said electronic devices including desktop computer or personal computer, portable laptop computer, smart phone and tablet.

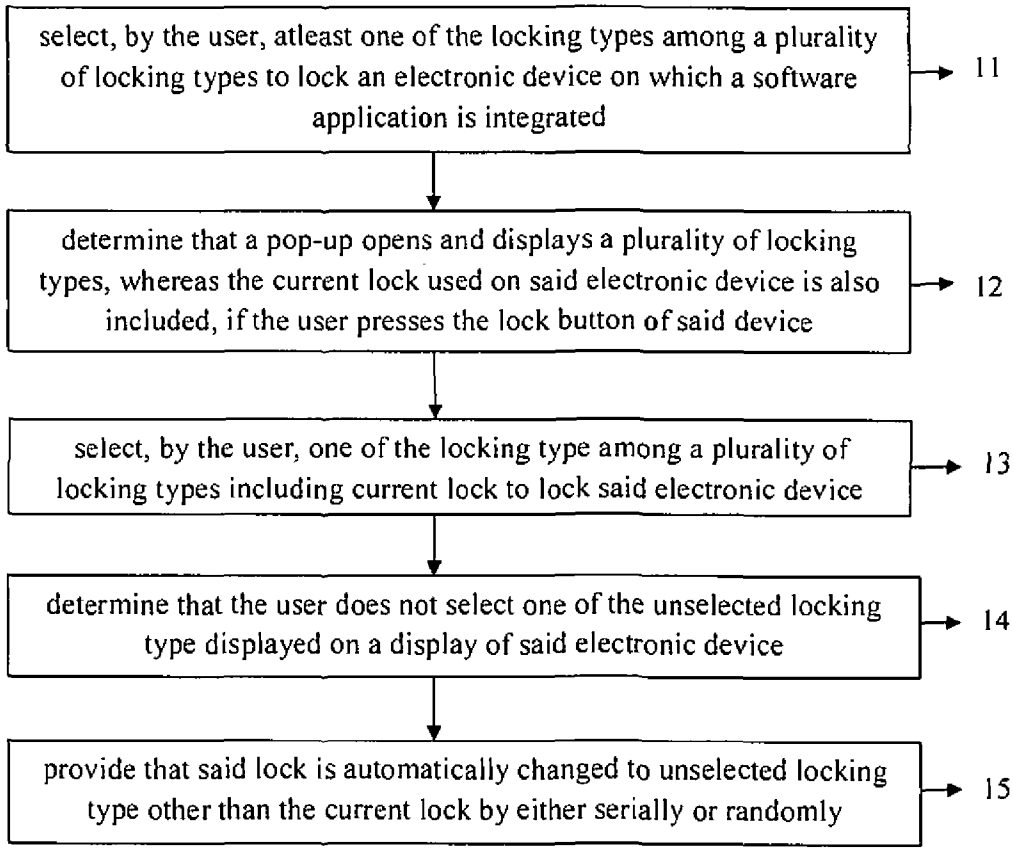
select, by the user, atleast one of the locking types among a plurality of locking types to lock an electronic device on which a software application is integrated
11
determine that a pop-up opens and displays a plurality of locking types, whereas the current lock used on said electronic device is also included, if the user presses the lock button of said device
12
select, by the user, one of the locking type among a plurality of locking types including current lock to lock said electronic device
13
determine that the user does not select one of the unselected locking type displayed on a display of said electronic device
14
provide that said lock is automatically changed to unselected locking type other than the current lock by either serially or randomly
15

Fig.1

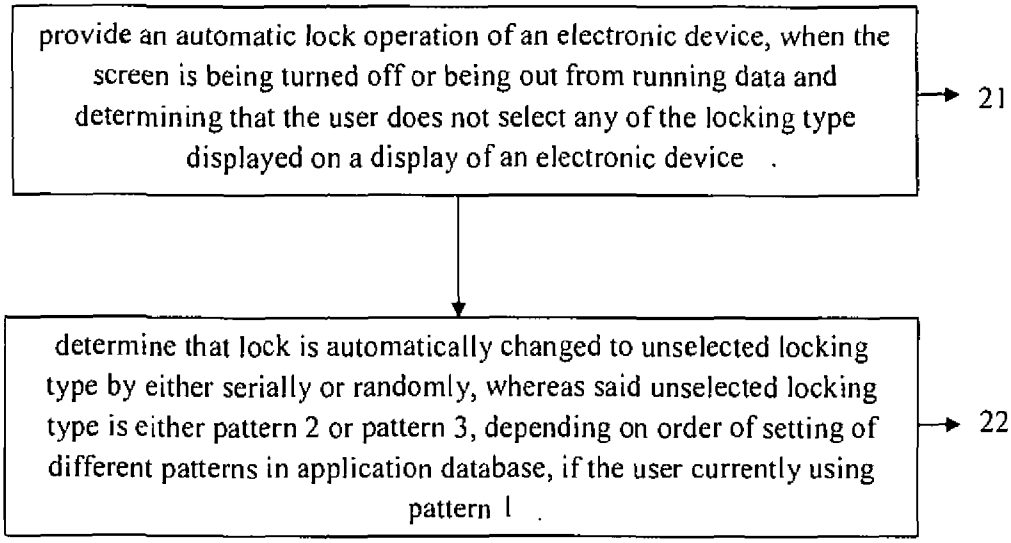
provide an automatic lock operation of an electronic device, when the screen is being turned off or being out from running data and determining that the user does not select any of the locking type displayed on a display of an electronic device .
21
determine that lock is automatically changed to unselected locking type by either serially or randomly, whereas said unselected locking type is either pattern 2 or pattern 3, depending on order of setting of different patterns in application database, if the user currently using pattern 1 .
22

Fig.2

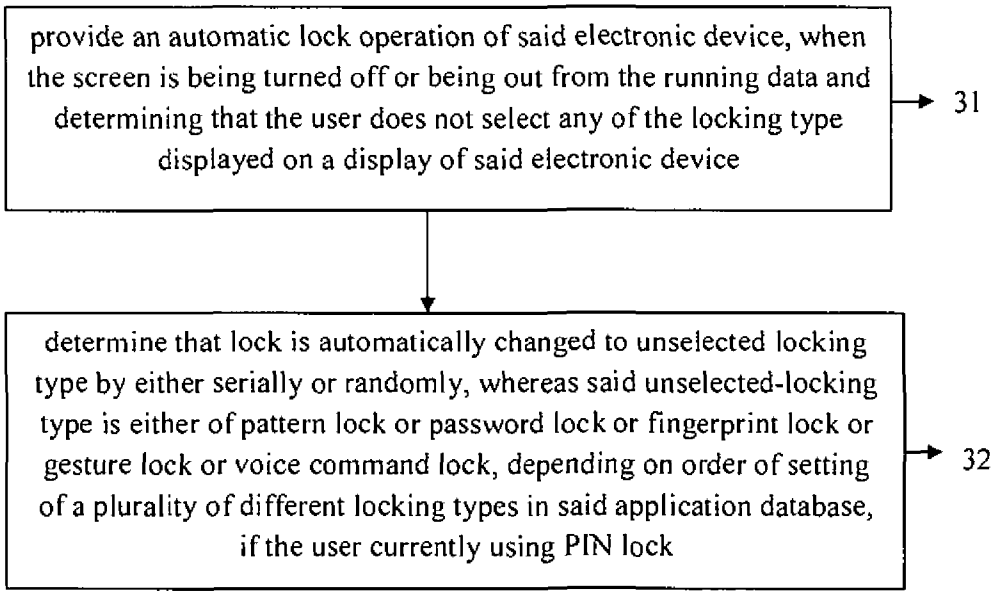
provide an automatic lock operation of said electronic device, when the screen is being turned off or being out from the running data and determining that the user does not select any of the locking type displayed on a display of said electronic device
31
determine that lock is automatically changed to unselected locking type by either serially or randomly, whereas said unselected-locking type is either of pattern lock or password lock or fingerprint lock or gesture lock or voice command lock, depending on order of setting of a plurality of different locking types in said application database, if the user currently using PIN lock
32

Fig.3

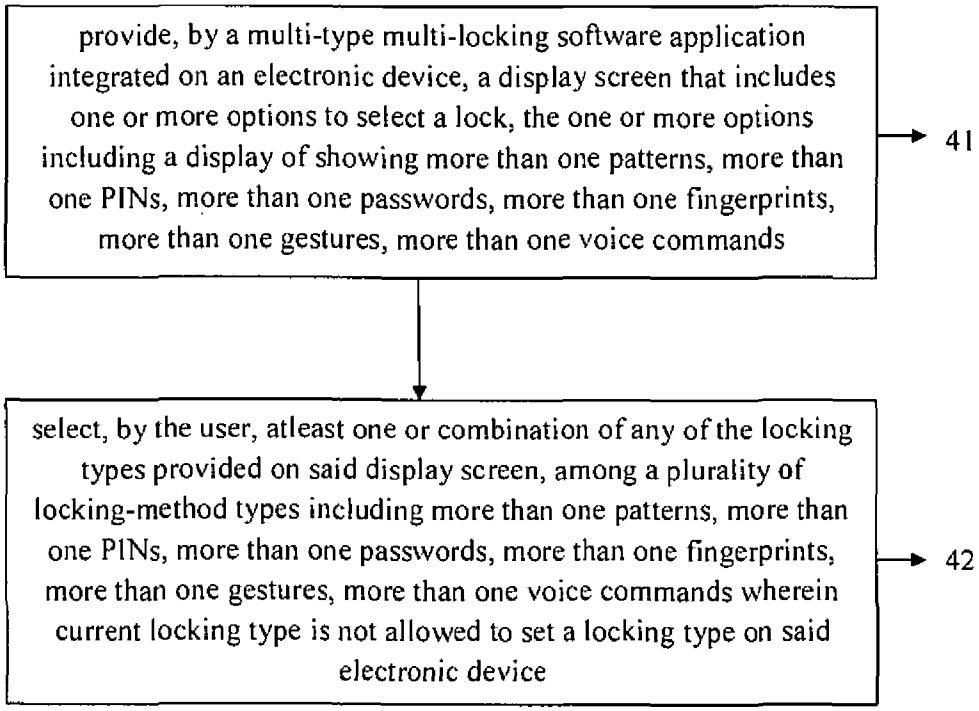
provide, by a multi-type multi-locking software application integrated on an electronic device, a display screen that includes one or more options to select a lock, the one or more options including a display of showing more than one patterns, more than one PINs, more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands
41
select, by the user, atleast one or combination of any of the locking types provided on said display screen, among a plurality of locking-method types including more than one patterns, more than one PINs, more than one passwords, more than one fingerprints, more than one gestures, more than one voice commands wherein current locking type is not allowed to set a locking type on said electronic device
42

Fig.4

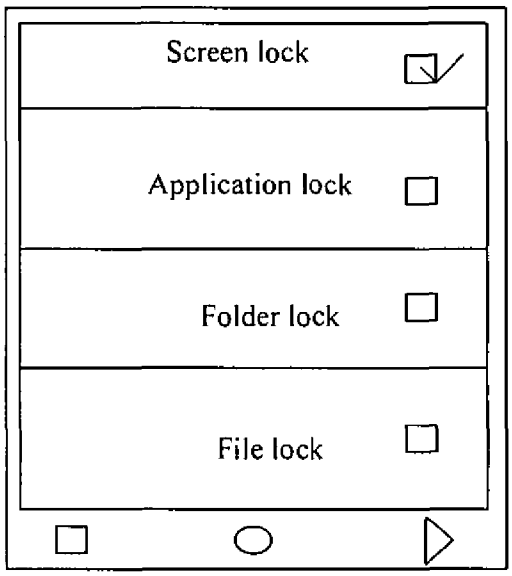

Fig. 5A

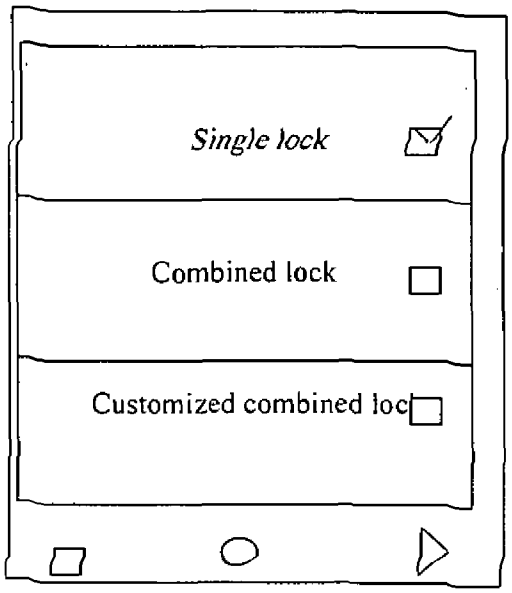

Fig. 5B

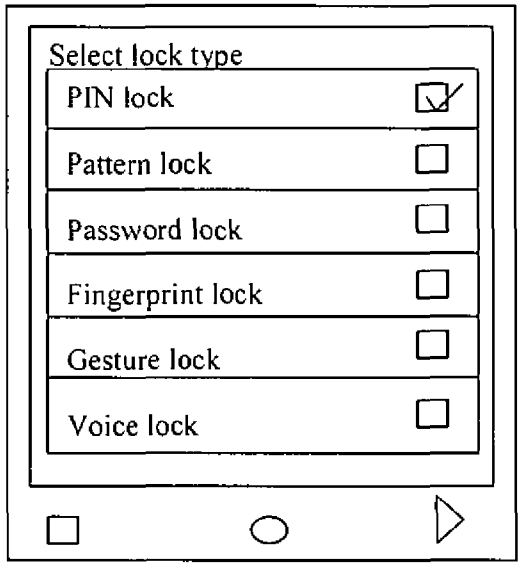
Select lock type
PIN lock
Pattern lock
Password lock
Fingerprint lock
Gesture lock
Voice lock

Fig. 5C

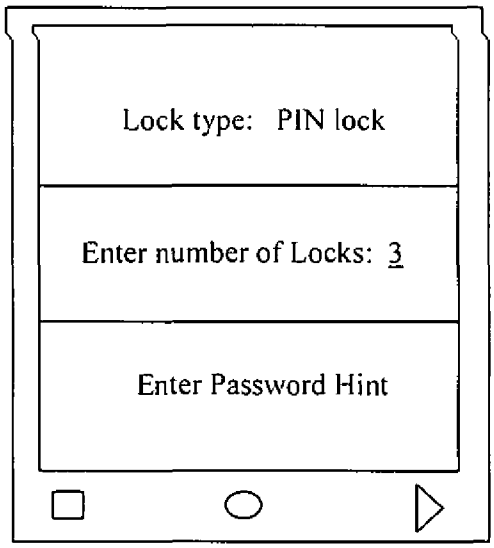
Lock type: PIN lock
Enter number of Locks: 3
Enter Password Hint

Fig. 5D

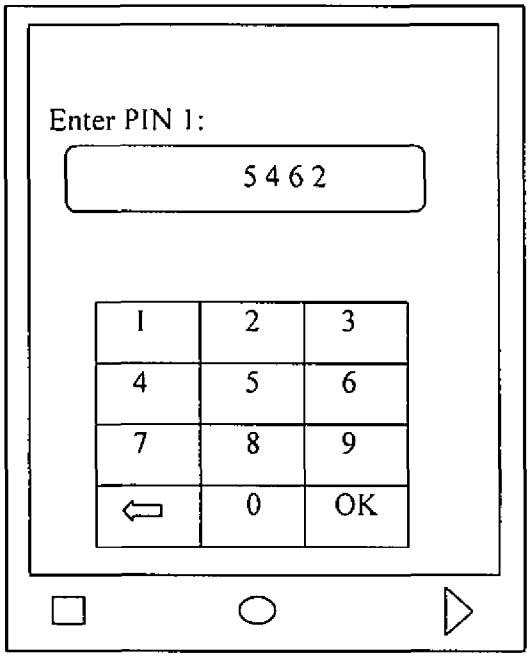

Fig. 5E

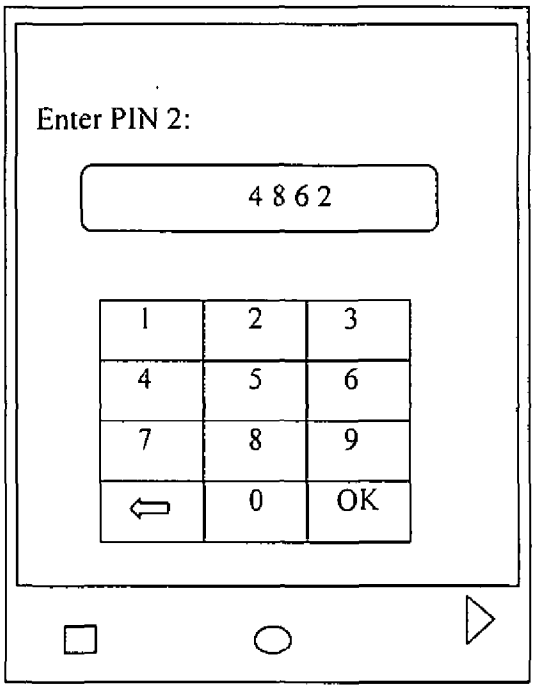

Fig. 5F

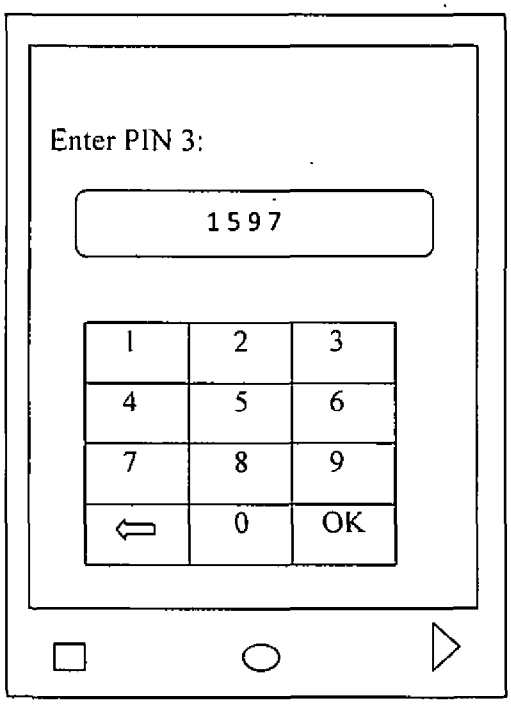

Fig. 5G

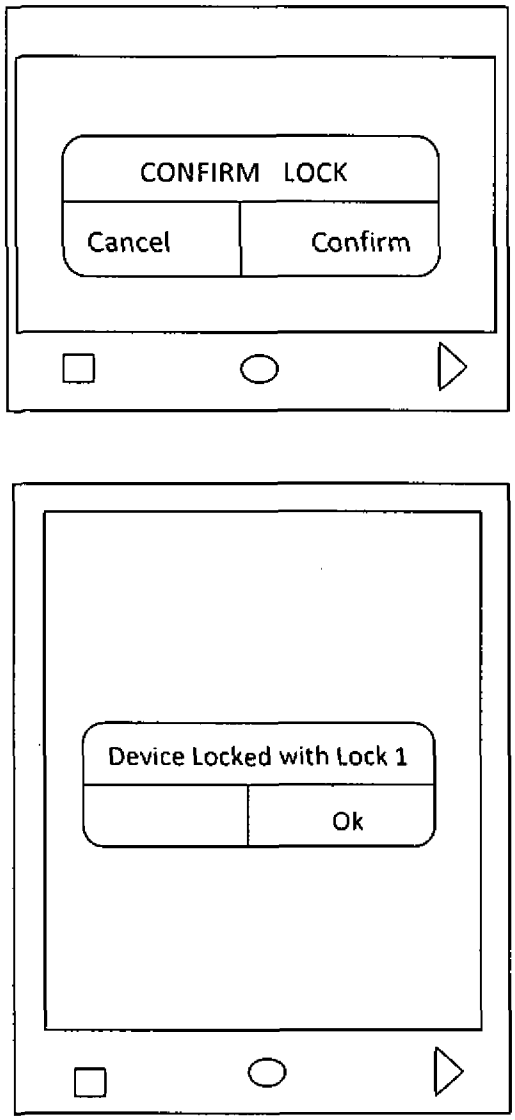

Fig. 5H

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IN2019/000005

A. CLASSIFICATION OF SUBJECT MATTER
G06F21/30 Version=2019.01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

Databases: TotalPatent One, IPO Internal Database
Keywords: unlocking, locking, electronic, device

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO2015183367 A1 (APPLE INC) 03 DECEMBER 2015 (03-12-2015) paragraphs [0015]-[0409]; abstract; claim 1	1-18
A	US8799994 B2 (CITRIX SYSTEMS INC) 05 AUGUST 2014 (05-08-2014) whole document	1-18

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
29-05-2019	29-05-2019
Name and mailing address of the ISA/ Indian Patent Office Plot No.32, Sector 14,Dwarka,New Delhi-110075 Facsimile No.	Authorized officer Chandan Kumar Jha Telephone No. +91-1125300200

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IN2019/000005

Citation	Pub.Date	Family	Pub.Date
WO 2015183367 A1	03-12-2015	JP 6149065 B2	14-06-2017
		AU 2015267671 B2	19-04-2018
		KR 101929372 B1	17-12-2018
		EP 3149554 A1	05-04-2017
		US 20150350297 A1	03-12-2015
		CN 106415431 A	15-02-2017
		TW I576754 B	01-04-2017
		NL 2014737 B1	13-04-2016