

DESCRIPTION

TITLE OF INVENTION

A Functional Flip Cover Protective Case with Physical Keypad for Smart Phone Devices

FIELD OF THE INVENTION

- 5 [0001] The present invention related to a protective flip cover device, particularly related to a protective flip cover device for smart phone device, more particularly related to a protective flip cover device having a built-in physical keypad and a transparent viewing window for smart phone device.

BACKGROUND OF THE INVENTION/ RELATED ART

- 10 [0002] Smart phone devices may be portable electronic device such as smart phones, cell phones, smart phone tablets etc. Smart phone devices recently experienced rapid development and tend to employ various additional functions in addition to a basic telephony functions. To cope with users' demands, smart phone devices having various functions have been launched.
- 15 [0003] Such the smart phone device includes a basic telephony function, and may be having a digital camera module, and in addition thereto, is capable of performing communication through Wireless Fidelity (Wi-Fi) or 3.sup.rd Generation (3G), 4.sup.th Generation (4G) network, wireless communication with neighbouring devices through a Bluetooth module, and communication using Near Field Communication (NFC). In addition, a variety of location
- 20 information services can be accessed using the smart phone by simultaneously employing a Global Positioning System (GPS) module, a terrestrial magnetism sensor, or an ambient light sensor, etc. The usage environment of the smart phone and smart phone tablet can thus be automatically controlled using various communication and location functions.
- [0004] Meanwhile, the smart phone and smart phone tablet allows a user to capture a video
- 25 including High Definition (HD) video by using a built in digital camera, to listen to the music of various file format including MPEG Audio Layer-3 (MP3) file, and to enjoy a video file

storing in the internal memory of or external memory card plug in to the smart phone devices.

[0005] A smart phone devices may be also used to store, to view, to create and to manage electronic documents, personal data etc.

- 5 [0006] The form factor of smart phone has evolved from initial-stage form factor like a bar-type form, a folder-type form, a slide-type form etc., to a smart phone or smart phone tablet which has a typical bar-type form factor and has a touch input/output pattern with a large screen placed to occupy a greater part of a front side of the smart phone device.

- 10 [0007] The recent trend of smart phones form factor are mostly dominating by bar-type form factor that has a large screen occupy majority surface area of the front side of the smart phone devices for better viewing and touch input/output experience. The size of the touch screen of smart phone device also getting bigger from proximate 3.5" to 6.5" or more and smart phone tablet will have a touch screen size from proximate 7" to 10" or more.

- 15 [0008] Despite the touch input of smart phone devices has virtually replace all the functionalities of traditional cell phone's physical keypad. However, there are some native characteristics of physical keypad that cannot be replaced by touch input using touch screens. Such characteristics include the physical touch and press feel a.k.a. tactile input of the physical keypad. The input accuracy of physical keypad also much better comparing with touch screen input particularly when using single hand and one thumb for inputting. In most
20 of the cases, the input using touch screen required both hands to hold the smart phone device and use the thumbs to input or one hand hold the smart phone device and the other hand do the input using fingers. Single hand input is mostly difficult because of the sensitivity of touch screen and particular when using bigger size smart phone device with large touch screen.

- 25 [0009] The simplicity and fixed key layout region of physical keypad also makes it possible for many users to make a call simply by using their thumbs without even looking at the phone screen as they can feel the keys and its positioning. This advantage of physical keypads is hard to mimic by touch input using touch screens as touch screens are too sensitive and users are prone to input wrongly. In addition, it is hard for smartphone users

to make a call without looking at the phone's touch screen as there is no physical touch feel like physical keypad.

[0010] There are some smart phones devices do provide both the touch screen and physical QWERTY keyboard as input interface. However, the present of physical QWERTY keyboard will typical occupy proximate 1/4 to 1/2 of area of the front side of the smart phone devices. This will cause the size of the touch screen will have to make smaller and will reduce the viewing and touch input/output experience of the users. Furthermore, the small physical keys of QWERTY keyboard are also difficult for users to make input accurately versus the physical keypad to make call particularly when using single hand thumb input method.

[0011] Therefore, the advantages of physical keypad mentioned above are hard to mimic by both touch screen input or physical QWERTY keyboard input.

[0012] Additionally, consumers who purchase a smart phone are most likely to use an additional protective case particularly flip cover protective case to protect the exterior of the smart phone and the touch screen of the smart phones from collided, wearing away and from damages caused by accidentally knocking, dropping, impacting and etc. The flip cover protective case is made of material such as rubber, silicon, urethane or metal aluminium or combination of various material etc. The flip cover protective case is having a protective case or shell or frame which is used to attach to the back side and/or edge of the smart phone device, and having an integral flip cover attached to one side of the protective case, shell or frame which can be opened when need to use the smart phone device and to be closed when the smart phone is not in used to protect the touch screen of the smart phone.

[0013] However, most of the flip cover protective case of the smart phone devices typically has just single function of protecting or decorating the exterior and touch screen of the smart phone. Some latest flip cover protective case do provide additional functions to activate and de-activate the touch screen of the smart phone device when user opens or closes the flip cover. Some flip cover is having a transparent viewing windows to display information like current date and time within the boundary of the transparent viewing window when user close the flip cover and also the user to answer a phone call by swiping the transparent viewing window without open the flip cover.

[0014] There are also flip cover protective cases come with Bluetooth QWERTY keyboard typically attached to the inner side of the flip cover. The user can only use the keyboard when open the flip cover. However, the input always need to always occupy both hands of the user or the user have to put the keyboard flip cover case on a flat surface like table to do the keyboard input. Furthermore, such type of flip cover is general much heavy and thicker.

SUMMARY OF THE INVENTION

[0015] An aspect of the present invention is to address at least the above-mentioned problems and/or disadvantages and provides additional advantages, by providing a functional flip cover protective case having a built in physical keypad on the front side of the flip cover when the flip cover is at the closed position and it is occupied proximate lower portion of the flip cover, and a transparent viewing window on the flip cover locate proximate the middle to upper part of the flip cover. When user closes the flip cover over the front side of the smart phone, the physical keypad will be activated to take cover the input controls of the smart phone device and when user open the flip cover, the physical keypad will be deactivated and return the input controls to the smart phone device. Therefore, the smart phone device with the flip cover closed may be implemented as a cell phone or smart phone with physical keypad to conveniently make call, receive call, text messaging and etc. without having to open the flip cover and one-handed operations also convenient as the ordinary keypad cell phone. Therefore, whilst protecting the smart phone device, the user can continue access most of the important smart phone features via the physical keypad input, with the advantages, convenient and the native tactile input of the physical keypad, the present invention address one of the biggest shortcoming of touch-based smart phone device that has no built in physical keypad.

[0016] In addition, a sensor may be built into the flip cover to detect the closing and opening action. The same may be achieved for smart phone device that having light sensor in the front side of the smart phone and therefore, for such type of smart phone device, the sensor on the flip cover is not necessary is unnecessary.

[0017] In addition, when the flip cover is in closed position, the output on the touch screen of the smart phone device will be display within the boundary of the transparent viewing

window so that the user can view the display output or content via the transparent windows.

[0018] Another aspect of the present invention is to provide a protective case, shell or frame which can always be used to hold and protect the smart phone device and the protective case, shell or frame having an integral functional flip cover to protect the touch screen of the smart phone device by covering the front side of the smart phone device.

[0019] In accordance with the aspect of the present invention, the physical keypad herein refers to numerical type of traditional cell phone's keypad. The physical keypad herein is not referring to physical QWERTY keyboard or other variant of physical keyboard for smartphone device.

[0020] In accordance with the aspect of the present invention, the physical keypad generally will be located at the lower part of the flip cover. For smaller smart phone devices with touch screen size proximate 4.5" below, the physical dial pad may locate at lower middle of the flip cover. For larger smart phone devices over proximate 4.5", the physical keypad might be right aligned to locate at proximate lower right of the flip cover or left aligned to locate at proximate lower left of the flip cover to facilitate single hand thumb input. For even larger devices like smart phone tablet may have 1 or 2 separate physical keypads at proximate lower left and/or lower right portion of the flip cover.

[0021] In accordance with the aspect of the present invention, the transparent viewing window or area will occupy proximate middle to upper portion of the flip cover and is mostly within the boundary of the smart phone device's touch screen except for flip cover that is formed by transparent material where the transparent viewing window is not required. The main function of the transparent viewing window is to allow the user view the content or display output on the smart phone's touch screen when using the physical keypad on flip cover as input device for the smart phone.

[0022] In accordance with the aspect of the present invention, the input communication or interactive methods between the physical keypad of the flip cover and the smart phone devices may be any one or combination of the following methods: 1) Having a compatible connector to plug in to the power/data port of the smart phone device including but not

limited to mini USB port and etc., 2) via Bluetooth communication, 3) via NFC communication, 4) via smart phone's touch screen by using a touch-enabled keypad. As the options 1, 2 and 3 required power sources to function; we can obtain the power through connection with the power port of the smart phone or using an internal build in rechargeable battery or both. The internal built in battery may be stored in the protective case or in the flip cover.

[0023] In addition, the protective case to hold the smart phone device may be a shell type protective case which cover the back side and edge of the smart phone device, or may be a frame type protective case which cover the edge of the smart phone device, or may be a battery cover type of protective case which replace the original battery cover of the smart phone device for smart phone device with removable battery cover.

[0024] In addition, the protective case may be having an electric circuit device built in and a power and data connector to connect to the smart phone device's power and data connector to obtain electrical power for the physical keypad of the flip cover and to communicate with the smart phone device.

[0025] In addition, the protective case or the flip cover maybe have Bluetooth communication device or NFC communication device built in for communicating the physical keypad with the smart phone device.

[0026] In addition, in order to minimize the overall thickness and weight of the flip cover whilst maintaining the good tactile input feel, the physical keypad of the flip cover may be implemented using emboss or 3D tactile membrane keypad or equivalents in terms of thickness, tactile input feel and durable.

[0027] In addition, the physical keypad's design, individual dial key design and layout might be vary and subject to further improvement from time to time for better input experiences.

[0028] In addition, the protect case, shell or frame may be formed by at least one of the materials including but not limited to rubber, silicone, urethane, polyurethane , synthetic resin, aluminium, plastic, PVC, synthetic leather or composition material and etc.

[0029] In addition, the physical keypad may be implemented using touch-enabled keypad that formed by touch sensitive material to provide touch input directly to the touch screen of the smart phone device when user press any key on the touch-enabled keypad to touch the surface of the touch screen. Such method required the key layout and positioning
5 synchronisation between the physical keypad with the touch screen of the smart phone.

[0030] In additional the flip cover may be formed by at least one of the materials including but not limited to rubber, silicone, urethane, polyurethane, synthetic resin, plastic, PVC, synthetic leather or composition material and etc.

[0031] In addition, the transparent viewing window may be formed by transparent materials
10 including but not limited to polystyrene, nylon, silicone, high tensile glasses and etc. that is suitable and durable. Additional treatment and coating may be applied to the transparent viewing window to improve its transparent visual effect and scratch resistance.

[0032] In addition, software module may be implemented in the smart phone device to enable and control the communication and/or functions between the physical keypad with
15 smart phone device.

[0033] Other aspects, advantages and salient features of the invention will become apparent to those skilled in the arts from the following detailed description, which, taken in conjunction with the annexed drawings, discloses exemplary embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWING

[0034] FIG. 1 is a perspective view of a flip cover protective case device with physical keypad
20 where the flip cover is in a partial closing position and illustrating a state in which a smart phone device is placed into the protective case according to 1st exemplary embodiment of the present invention;

[0035] FIG. 2 is a top view and 3rd angle projection front view of a flip cover protective case
25 device with physical keypad where the flip cover is in a fully closing position.

[0036] FIG. 3 is a top view of a flip cover protective case device with physical keypad in fully open position with the both the top side of the flip cover and bottom side of the protective case facing up;

[0037] FIG. 4 is a 3rd angle projection's front view of FIG. 3 and illustrating a state in which a
5 smart phone device is placed into the protective case of FIG. 4;

[0038] FIG. 5 is a flip cover protective case device with physical keypad in fully open position with the both the inner sides of the flip cover and of the protective case facing up;

[0039] FIG. 6 a 3rd angle projection's front view of FIG. 5 and illustrating a state in which a smart phone device is placed into the protective case of FIG. 6;

10 [0040] FIG. 7 is a flip cover protective case device with physical keypad with difference flip cover opening direction from bottom to top instead of left to right according to 2nd exemplary embodiment of the present invention;

[0041] FIG. 8 is a 3rd angle projection's right view of FIG. 7;

[0042] FIG. 9 is another version of a flip cover protective case device with physical keypad in
15 which the protective case is a frame type case according to 3rd exemplary embodiment of the present invention.

[0043] FIG. 10 a 3rd angle projection's front view of Fig. 9 and illustrating a state in which a smart phone device is placed into the protective case of FIG. 10;

[0044] FIG. 11 is a flip cover protective case device with physical keypad with difference
20 keypad layout design according to 4th exemplary embodiment of the present invention.

[0045] FIG. 12 is a flip cover protective case device with physical keypad with difference dial keys design according to 5th exemplary embodiment of the present invention.

[0046] FIG. 13 is a flip cover protective case device with physical keypad with additional function keys according to 6th exemplary embodiment of the present invention.

[0047] Fig. 14 is a flip cover device with physical dial pad of the present invention shows the right alignment of the dial pad for bigger size smart phone devices according to 7th exemplary embodiment of the present invention.

[0048] FIG. 15 is a flip cover protective case device with physical keypad shows the right alignment of the keypad for bigger size smart phone device according to 8th exemplary embodiment of the present invention.

[0049] FIG. 18 is a flip cover protective case device with physical keypad shows the left alignment of the keypad for smart phone tablet device according to 9th exemplary embodiment of the present invention.

[0050] FIG. 19 is a flip cover protective case device with physical keypad with 2 keypads on lower left and lower right of smart phone tablet devices according to 10th exemplary embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0051] The following description with reference to the accompanying drawings is provided to assist in a comprehensive understanding of exemplary embodiments of the invention as defined by the claims and their equivalents. It includes various specific details to assist in that understanding but these are to be regarded as merely exemplary. Accordingly, those of ordinary skill in the art will recognize that various changes and modifications of the embodiments described herein can be made without departing from the scope and spirit of the invention. Also, descriptions of well-known functions and constructions are omitted for clarity and conciseness.

[0052] The terms and words used in the following description and claims are not limited to the bibliographical meanings, but, are merely used by the inventor to enable a clear and consistent understanding of the invention. Accordingly, it should be apparent to those skilled in the art that the following description of exemplary embodiments of the present invention are provided for illustration purpose only and not for the purpose of limiting the invention as defined by the appended claims and their equivalents.

[0053] The present invention refers a smart phone device as a touch input/output-based smart phone or smart phone tablet in which a larger area of front side of the smart phone device is occupied by a touch screen device and there is no built in physical keypad for the smart phone device. FIG. 1 is a perspective view of a functional flip cover protective case device with physical keypad where the flip cover 1 is in a partial closing position, and illustrating a state in which a smart phone device 31 is placed into the protective case 11 with the touch screen 34 face up. The arrow 21 is the closing direction of the flip cover 1. There is a physical keypad 2 with dial keys 3 and function keys 4 occupying the lower portion of front side of the flip cover 1. In addition, there is also a transparent viewing window 5 occupying upper portion of the flip cover 1. The through slot hole 6 on the flip cover 1 is the relief hole for the built in speaker of the smart phone device.

[0054] Referring to FIG. 1, label 11 is the protective case or protective back cover for the smart phone device in which there is a relief through hole 12 for the build in camera device of the smart phone device, a relief through hole 13 for the build in flash light of the smart phone device, a relief through hole 14 for the back speaker of the smart phone device and a power/data port 15 to be connect to the power/data port of the smart phone device. The position of through holes 12, 13, 14 may be varying depending on the model of smart phone device it attaches to. The location and type of power/data port 15 may also difference depending on smart phone device attach to.

[0055] FIG. 2 is a combine perspective views illustrating a functional flip cover protective case with physical keypad in which the flip cover is in a fully closed position. The direction arrow 21 illustrates the closing direction of the flip cover.

[0056] FIG. 3 is a top view of a functional flip cover protective case device with the built in physical keypad in fully open position with the both the top side of the flip cover 1 and bottom side of the protective case 11 facing up. FIG. 4 is the 3rd angle projection front view of the FIG. 3 illustrating a state in which a smart phone device 31 is placed into the protective case 11 where the label 32 is the front side of the smart phone device 31 where the touch screen of the smart phone device locates and the label 33 is the back side of the smart phone device 31. Label 21 shows the closing direction of the flip cover after the smart phone device 31 is placed in to the protective case 11.

[0057] FIG. 5 is a top view of a flip cover protective case device with built in physical keypad in fully open position with the both the inner sides of the flip cover 1 and protective case 11 facing up. FIG. 6 is the 3rd angle projection front view of the FIG. 5 illustrating a state in which a smart phone device 31 is placed into the protective case 11 where the label 32 is the front side of the smart phone device 31 where the touch screen of the smart phone device locates and the label 33 is the back side of the smart phone device 31. Label 21 shows the closing direction of the flip cover after the smart phone device 31 is placed in to the protective case 11.

[0058] Referring to FIGS. 3 and 4, as well as FIGS. 5 and 6, a smart phone device 31 is placed into a protective case 11 to decorate the exterior thereof or improve a grip feel and to protect surrounding edge and/or back side of smart phone device 31. After the device 31 is placed into the protective case 11, the flip cover 1 can then be closed in direction 21 to provide protection to the front side of the smart phone device 31 where the touch screen locates.

[0059] The exemplary smart phone device 31 depicted in FIGS. 4, 6 and 10, is a touch input/output-based smart phone. Although not shown, there will be a touch screen display device which occupies a greater part of a front side 32 the smart phone device 31, an ear piece speaker for receiving a voice of a peer user is placed to an upper portion of the front side 32 of the smart phone device 31, a microphone for transmitting a voice to the peer user is placed to a lower portion of the smart phone device 31. In addition thereto, although still not shown, such a smart phone may further include various sensors, such as a well-known digital camera module, an ambient light sensor, etc., to improve a function of smart phone device 31.

[0060] Referring to FIGS. 1 to 17, there is at least one physical keypad device 2 on the front side of flip cover 1. When a smart phone device 31 is placed in to the protective cover 11 as illustrated in FIGS. 2, 4 and 10, and when user closes the flip cover 1 over the front side of the smart phone device 31, the built in physical keypad on the flip cover will be activated to take over the input controls of the smart phone device so that user can use the physical keypad on the front side of the flip cover to do all the telephony operation including but not limited to making call, receiving call, text messaging and etc. In addition, the user can also

use the physical keypad to operate all the smart phone functionalities possible with the physical keypad when the flip cover is in closed position.

[0061] Although it is shown in FIGS 1, 2, 4 and 10, there is a power/data port 15 on the lower portion of the protective case 11 which to be used as the power and communication port between the physical keypad 2 with the smart phone device 31, the present invention is not limited there to, and thus the communication between the physical keypad and the smart phone device may be accomplish using one or combination of the following methods:

1) Having a compatible connector to plug in to the power/data port of the smart phone device including but not limited to mini USB port and etc., 2) having a built in Bluetooth communication device in the flip cover or protective case, 3) having a NFC communication device in the flip cover or protective case, 4) via smart phone's touch screen by using a touch-enabled keypad. As the options 1, 2 and 3 required power sources to function; we can obtain the power through connection with the power port of the smart phone or using an internal build in rechargeable battery or both. The internal built in battery may be stored in the protective case or in the flip cover.

[0062] Although it is shown in FIGS. 1, 2, 3, 5, 7, 9, 11 to 17, there is at least an transparent viewing window 5 on the flip cover 1, the present invention is not limited there to, and thus the flip cover may be formed by transparent material and the transparent viewing window 2 is not required.

[0063] In addition, although is shown in FIGS. 1, 2, 3, 5, 7, 9, 11 to 17, the flip cover 1 is covering proximate the whole area or surface of the front side of a smart phone device, the present invention is not limited there to, and thus the flip cover may be cover a smaller area or surface of the front side of the smart phone device but always at least cover the whole surface area of the touch screen on the front side of the smart phone device.

[0064] FIGS. 7 and 8 is another variant of exemplary embodiment of the present invention where the flip cover with physical keypad is attached to the upper or lower side of the protective case instead of left or right side of the protective case. The FIGS. 9 and 10 shows another protective case option where the protective case is formed by a frame type case in which the U shape frame 11a will combine with U shape frame 11b in direction 16 over the

edge of the smart phone device to hold and protect the smart phone device. The type of protective case to be used does not limit to the abovementioned methods; it may also use the battery cover type of protective case to replace the original battery cover of the smart phone device if the smart phone device is having a removable battery cover and etc.

5 [0065] FIGS. 11, 12 and 13 shows variety types of physical keypad layout design, dial key design and function key design, the present invention is not limited there to, and thus may be using difference physical keypad design and layout to provide better keypad input functionality and experience .

10 [0066] FIGS. 14 and 15 shows the positioning of the physical keypad to be right and left aligned on the flip cover. It is necessary for bigger size smart phone device to make the one-handed operation easy.

[0067] FIGS. 16 and 17 shows the physical keypad on the flip cover of smart phone tablet device. As the smart phone tablet device is much bigger, there may have two physical keypad on left and right side of the flip cover as in FIG. 17 so that the user can either use left
15 or right hand to do the input.

[0068] In addition, although not shown, a sensor may be built into the flip cover 1 to detect the closing and opening action. The same may be achieved for smart phone device that having light sensor in the front side of the smart phone and therefore, for such type of smart phone device, the sensor on the flip cover is not necessary is unnecessary.

20 [0069] In addition, when the flip cover 1 is in closed position, the output on the touch screen of the smart phone device will be display within the boundary of the transparent viewing window 5 so that the user can view the display output or content via the transparent windows.

[0070] Another aspect of the present invention is to provide a protective case, shell or
25 frame which can always be used to hold and protect the smart phone device and the protective case 11 or frame 11a and 11b having an integral functional flip cover 1 to protect the touch screen of the smart phone device by covering the front side of the smart phone device.

[0071] In accordance with the aspect of the present invention, the physical keypad 2 herein refers to numerical type of traditional cell phone's keypad. The physical keypad herein is not referring to physical QWERTY keyboard or other variant of physical keyboard for smartphone device.

5 [0072] In addition, the protective case may be having an electric circuit device built in and a power and data connector to connect to the smart phone device's power and data connector to obtain electrical power for the physical keypad 2 of the flip cover 1 and to communicate with the smart phone device.

10 [0073] In addition, although not shown, the protective case 11 or the flip cover 1 maybe have Bluetooth communication device or NFC communication device built in for communicating the physical keypad 2 with the smart phone device.

[0074] In addition, in order to minimize the overall thickness and weight of the flip cover while maintenance good tactile input feel, the physical keypad 2 of the flip cover 1 may be implemented using emboss tactile membrane keypad or equivalents in them of thickness,
15 tactile input feel and durable.

[0075] In addition, the physical keypad's design, individual dial key design and layout might be vary and subject to further improvement from time to time for better input experiences.

[0076] In addition, the protect case 11 or frame 11a, 11b may be formed by at least one of the materials including but not limited to rubber, silicone, urethane, polyurethane ,
20 synthetic resin, aluminium, plastic, PVC, synthetic leather or composition material and etc.

[0077] In addition, the physical keypad 2 may be implemented using touch-enabled keypad that formed by touch sensitive material to provide touch input directly to the touch screen of the smart phone device when user press any key on the touch-enabled keypad to touch the surface of the touch screen. Such method required the key layout and positioning
25 synchronisation between the physical keypad with the touch screen of the smart phone.

[0078] In additional the flip cover 1 may be formed by at least one of the materials including but not limited to rubber, silicone, urethane, polyurethane, synthetic resin, plastic, PVC, synthetic leather or composition material and etc.

[0079] In addition, the transparent viewing window 5 may be formed by transparent materials including but not limited to polystyrene, nylon, silicone, high tensile glasses and etc. that is suitable and durable. Additional treatment and coating may be applied to the transparent viewing window to improve its transparent visual effect and scratch resistance.

- 5 [0080] In addition, software module may be implemented in the smart phone device to correspondence with the physical keypad and/or sensor of the flip cover 1.

[0081] The advantage of the present invention is to add physical keypad functionalities to the smart phone device that the physical keypad is not presented. The present invention not only serves the original purpose of protecting and decorating the smart phone devices, but
10 also allow user continue to use majority functions of the smart device when the flip cover is closed via the physical keypad on the front side of the flip cover. The physical keypad on the flip cover also makes one-handed operations possible to make call, receive call, text messaging etc. This is particular crucial when there is a need to make a urgent call whilst only one hand is free for safety purpose.

- 15 [0082] As would be seen by one skilled in the art there are various methods capable of modifying these embodiments without departing from the scope of claims in the present invention. In other words, there may be many other methods for which the present invention can be implemented without departing from the scope of the claims.

[0083] Although the invention has been shown and described with reference to certain
20 exemplary embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims and their equivalents. Therefore, the scope of the present invention should not be limited to the above-described embodiments but should be determined by not only the appended claims but also the
25 equivalents thereof.

CLAIMS

1. A functional flip cover protective case device for a touch-based smart phone device, comprising: a protective case to hold and protect the smart phone device and a flip cover attached to the protective case to protect the touch screen of the smart phone; a built in physical keypad device on the front side of the flip cover when the flip cover is in closed position; a transparent viewing window on the flip cover to view smart phone device's display output;
2. The functional flip cover protective case device of claim 1, wherein a censor device may be built into the flip cover to detect the opening and closing action of the flip cover;
3. The functional flip cover protective case device of claim 1, wherein upon the flip cover is in closed position, the physical keypad will be activated to take over the input controls of the smart phone device;
4. The functional flip cover protective case device of claim 2, wherein upon the flip cover is in closed position, the display output on the touch screen of the smart phone device will limit to display proximate within the boundary of transparent display window;
5. The functional flip cover protective case device of claim 1, wherein upon the flip cover is in opened position, the physical keypad will be deactivated and release the input controls to the smart phone device;
6. The functional flip cover protective case device of claim 1, wherein further comprising a software module install in the smart phone device to correspondence with the censor and physical keypad of the flip cover;
7. The functional flip cover protective case device of claim 1, wherein the size of flip covers shall cover at least cover the entire surface of the touch screen on the front side of the smart phone device;
8. The functional flip cover protective case device of claim 1, wherein the positioning of the physical keypad may be left or right align for bigger size smart phone;

9. The functional flip cover protective case device of claim 1, wherein the flip cover may be attached to any side of the protective case;

10. The functional flip cover protective case device of claim 1, wherein the physical keypad device is built into the front side of the flip cover;

5 11. The functional flip cover protective case device of claim 9, wherein the physical keypad is type of numeric keypad with variety of design, layout and function keys and excludes QWERTY keyboard type of keypad.

12. The functional flip cover protective case device of claim 9, wherein the physical keypad is of the type super thin keypad such as emboss or 3D tactile membrane keypad or
10 equivalent in terms of thickness and tactile input feel;

13. The functional flip cover protective case device of claim 1, wherein specialized software module may be implemented in the smart phone device for corresponding with the physical keypad and/or sensor of the flip cover;

14. The functional flip cover protective case device of claim 1, wherein the flip cover is of
15 type transparent material thus the transparent viewing window is not required.