Mobile phone with support member

A mobile phone (100) including a housing (104), and the support member (102) pivotally coupled to the housing. The support member is movable between a first configuration and a second configuration and is aligned substantially parallel to a side portion (108) of the housing in the first configuration. The support member extends at an angle relative to the side portion (108) of the housing in the second configuration. The support member supports the housing in an upright position in the second configuration. The mobile phone also includes an image capturing device (106) that is integrated with the housing.
Description

FIELD OF THE DISCLOSURE

[0001] The present disclosure generally relates to portable electronic devices, and more particularly, handheld electronic devices, for example, mobile telephones, with a support member.

BACKGROUND

[0002] The use of mobile phones is increasing exponentially. Additional features, like, cameras, alarm clocks, Internet enablement such as Wireless Application Protocol (WAP), and Bluetooth services, are increasing the popularity of these devices. Mobile phones with cameras have become an attractive alternative to conventional cameras. However, unlike in the case of conventional cameras, there is a problem in stabilizing a mobile phone on a surface to capture a steady image. Moreover, it may be difficult for a person capturing an image with a mobile phone camera to be a part of the captured image.

[0003] There are various techniques for stabilizing mobile phones. Some mobile phones have at least one flat-side face and can be rested on a surface by placing their flat-side face on the surface. However, although the phone is stabilized, the captured image may get rotated at a right angle from the normal viewing plan of the screen. Secondly, the surface can limit the view of the camera lens while capturing an image. Moreover, due to the lack of a remote operation function in such mobile phone cameras, the operator has to press the 'click' button to capture an image. As a result, it may still be difficult for the operator to be a part of the captured image.

[0004] Another existing technique makes use of an external tripod. The mobile phone can be fixed on a mounting surface of the tripod and the tripod can be stabilized on a rest surface. However, in the case of most mobile phones, this technique can only be effective when the external tripod is large enough to hold a substantial portion of the mobile phone. This makes the portability of the external tripod a problem in implementing this technique.

BRIEF DESCRIPTION OF THE FIGURES

[0005] The accompanying figures, where like reference numerals refer to identical or functionally similar elements throughout the separate views, and which, together with the detailed description below, are incorporated in and form part of the specification, serve to further illustrate various embodiments and explain various principles and advantages, all in accordance with the present invention.

[0006] FIG. 1 illustrates a mobile phone with a support member in a first configuration, in accordance with an embodiment of the present invention;

[0007] FIG. 2 illustrates the mobile phone with the support member in a second configuration, in accordance with another embodiment of the present invention;

[0008] FIG. 3 illustrates a block diagram of the mobile phone, in accordance with an embodiment of the present invention; and

[0009] FIG. 4 is a flow diagram illustrating a method for capturing an image with the mobile phone, in accordance with an embodiment of the present invention.

[0010] Skilled artisans will appreciate that elements in the figures are illustrated for simplicity and clarity and have not necessarily been drawn to scale. For example, the dimensions of some of the elements in the figures may be exaggerated, relative to other elements, to improve an understanding of embodiments of the present invention.

DETAILED DESCRIPTION

[0011] Before describing in detail the mobile phone with a support member, in accordance with various embodiments of the present invention, it should be observed that the present invention resides primarily in combinations of method steps related to capturing an image by the mobile phone with a support member. Accordingly, the apparatus components and method steps have been represented, where appropriate, by conventional symbols in the drawings, showing only those specific details that are pertinent for an understanding of the present invention, so as not to obscure the disclosure with details that will be readily apparent to those with ordinary skill in the art, having the benefit of the description herein.

[0012] In this document, the terms "comprises," "comprising," or any other variation thereof, are intended to cover a non-exclusive inclusion, such that a process, method, article or apparatus that comprises a list of elements does not include only those elements but may include other elements that are not expressly listed or inherent in such a process, method, article or apparatus. An element proceeded by "comprises ... a" does not, without more constraints, preclude the existence of additional identical elements in the process, method, article or apparatus that comprises the element. The term "another," as used in this document, is defined as at least a second or more. The terms "includes" and/or "having," as used herein, are defined as comprising.

[0013] Various embodiments of the present invention provide a mobile phone with a support member. The mobile phone includes a housing, and a support member that is pivotally coupled to the housing. The support member is movable between a first configuration and a second configuration and is aligned substantially parallel to a side portion of the housing in the first configuration. Further, the support member extends at an angle relative to the side portion of the housing in the second configuration. The support member supports the housing in an upright position with respect to a surface when in the second configuration. Moreover, the mobile phone includes an image capturing device, which is integrated with the
housing. The image capturing device can be controlled remotely.

[0014] In another embodiment, a mobile phone including a Bluetooth device and a reconfiguring module, in addition to the housing, the support member, and the image capturing device, is provided. The Bluetooth device is capable of functioning as a headset and a remote control. The reconfiguring module includes means for reconfiguring the Bluetooth device from the headset to the remote control, when the support member is in the second configuration. Further, the reconfiguring module includes means for enabling the image capturing device to capture images when instructed by means of the remote control.

[0015] In yet another embodiment, a method for capturing an image by the mobile phone is provided. The method includes reconfiguring the Bluetooth device from the headset to the remote control, when the support member is moved from the first configuration to the second configuration. Further, the method includes activating the image capturing device when the support member is moved from the first configuration to the second configuration. The method also includes capturing the image by the image capturing device when instructed by means of the remote control.

[0016] FIG. 1 illustrates a mobile phone 100 with a support member 102 in a first configuration, in accordance with an embodiment of the present invention. The mobile phone 100 also includes a housing 104, and an image capturing device 106. Examples of the mobile phone 100 include, but are not limited to, clam-shell mobile phones, candy-bar mobile phones, rail-guide mobile phones, slider mobile phones, and rotator mobile phones.

[0017] Various embodiments of the present invention are illustrated with reference to clam-shell mobile phones. However, it will be readily apparent to a person with ordinary skill in the art that the invention is equally applicable to other types of mobile phones as well. In an embodiment, the mobile phone 100 is a clam-shell phone, as shown in FIG. 1. In accordance with this embodiment, the housing 104 includes a first housing 110 and a second housing 112, and the second housing 112 includes the side portion 108.

[0018] In the first configuration, the support member 102 is aligned substantially parallel to the side portion 108. The support member 102 can be opened to stabilize the mobile phone 100 on a surface 114. For an embodiment, the support member 102 can include a stand 116 and a hinge 118. For this embodiment, the stand has a first end 120 and a second end 122. Functions of the stand 116, the hinge 118, the first end 120, and the second end 122 are described in detail in conjunction with FIG. 2. The mobile phone 100 can be stabilized for various purposes, for example, to use the mobile phone 100 as a clock, to watch a video on the mobile phone 100, and to capture an image with the image capturing device 106 of the mobile phone 100.

[0019] The image capturing device 106 is integrated with the housing 104. For an embodiment, when the mobile phone 100 is a clam-shell phone, the image capturing device 106 can be integrated with the first housing 110, as shown in FIG. 1. For another embodiment, the image captured by the image capturing device 106 can be a still image. For another embodiment, the image captured by the image capturing device 106 can be a moving image. For example, the image capturing device 106 is capable of taking photographs as well as recording movie clips. Further, the image capturing device 106 is capable of being controlled remotely. An example of an image capturing device 106 can be a camera that is built in the mobile phone 100.

[0021] FIG. 2 illustrates the mobile phone 100 with the support member 102 in a second configuration, in accordance with another embodiment of the present invention. The mobile phone 100 includes a Bluetooth device 202, in addition to the housing 104, the support member 102, and the image capturing device 106.

[0022] The support member 102 is movable between a first configuration and a second configuration. In the first configuration, the support member 102 is aligned substantially parallel to the side portion 108. In the second configuration, the support member 102 extends at a predefined angle relative to the side portion 108. Further, the support member 102 supports the housing 104 in an upright position when the support member 102 is in the second configuration.

[0023] In the second configuration, the housing 104 can be supported on the surface 114 by the support member 102. If the mobile phone 100 is a clam-shell mobile phone, the second housing 112 can be supported on the surface 114 by the support member 102. The support member 102 is designed in such a way that the first end 120 of the stand 116 rests on the surface 114, and the second end 122 of the stand 116 is pivotally coupled to the side portion 108 with the help of the hinge 118. The hinge 118 enables the stand 116 to open at predefined angles relative to the side portion 108. As a result, the support member 102 can be adjusted at any angle, within a predefined range, relative to the side portion 108. This helps a user of the mobile phone 100 to easily locate a desired view to capture an image with the image-capturing device 106. The stabilization of the housing 104, and therefore, the mobile phone 100, is clearly depicted in FIG. 2 by moving the support member 102 into the second configuration and resting the mobile phone on the surface 114.

[0024] The Bluetooth device 202 is capable of functioning as a headset and a remote control. According to an embodiment, an Audio Video Remote Control (AVRC) profile is implemented on the Bluetooth device 202, which enables the Bluetooth device 202 to function as the headset and the remote control. The Bluetooth device 202 is configured from the headset to the remote control when the support member 102 is moved to the second configuration. For an embodiment, the image capturing device 106 is automatically activated when the support member...
102 is moved to the second configuration. Similarly, the image capturing device 106 is enabled to capture the image when instructed by the remote control, for example, the Bluetooth device 202.

[0025] FIG. 3 illustrates a block diagram of the mobile phone 100, in accordance with an embodiment of the present invention. The mobile phone 100 is shown to include a reconfiguring module 302 that is capable of communicating wirelessly with the Bluetooth device 202.

[0026] The reconfiguring module 302 includes means for reconfiguring the Bluetooth device 202 from a headset to a remote control when the support member 102 is in the second configuration, hereinafter referred to as first Bluetooth device reconfiguring means. For example, when a user of the mobile phone 100 moves the support member 102 from the first configuration to the second configuration, the first Bluetooth device reconfiguration means reconfigures the Bluetooth device 202 from the headset to the remote control. The reconfiguring module 302 also includes means for enabling the image capturing device 106 to capture the images when instructed by means of the remote control, hereinafter referred to as image capturing device enabling means. For example, the image capturing device enabling means enables the image capturing device 106 to be controlled remotely by the Bluetooth device 202, to capture the image when instructed by means of the Bluetooth device 202. An example of the first Bluetooth device reconfiguration means and image capturing device enabling means can be a processor.

[0027] For an embodiment, the reconfiguring module 302 also includes means for automatically activating the image capturing device 106 when the support member 102 is in the second configuration, hereinafter referred to as image capturing device activating means. In this embodiment, the user is not required to manually activate the image capturing device 106. The image capturing device activating means activates the image capturing device 106 automatically when the user moves the support member 102 from the first configuration to the second configuration. An example of the image capturing device activating means can be a processor.

[0028] For an embodiment, the reconfiguring module 302 also includes means for reconfiguring the mobile phone 100 into a slave device when the support member 102 is in the second configuration, hereinafter referred to as mobile phone reconfiguring means. In this embodiment, the Bluetooth device 202 can be controlled by the mobile phone 100, in accordance with an embodiment of the present invention.

[0029] For an embodiment, the reconfiguring module 302 also includes means for reconfiguring the Bluetooth device 202 from the remote control to the headset when a call is received at the mobile phone 100 while the support member 102 is in the second configuration, hereinafter referred to as second Bluetooth device reconfiguring means. For example, when the user receives a call while the support member 102 is in the second configuration, the second Bluetooth device reconfiguring means will reconfigure the Bluetooth device 202 to the headset, such that the user can operate the headset to attend the call. In this embodiment, the reconfiguring module 302 also includes means for reconfiguring the Bluetooth device 202 from the headset to the remote control when the call ends while the support member 102 is in the second configuration, hereinafter referred to as third Bluetooth device reconfiguring means. For example, when the user ends the call while the support member 102 is in the second configuration, the third Bluetooth device reconfiguring means reconfigures the Bluetooth device 202 to the remote control, such that the user can resume capturing images when the call ends. An example of the second Bluetooth device reconfiguring means and third Bluetooth device reconfiguring means can be a processor.

[0030] For an embodiment, the reconfiguring module 302 also includes means for de-activating the image capturing device 106 when a call is received at the mobile phone 100 while the support member 102 is in the second configuration, hereinafter referred to as image capturing device de-activating means. For example, when the user receives a call while the support member 102 is in the second configuration, then the image capturing device de-activating means de-activates the image capturing device 106. For this embodiment, the reconfiguring module 302 also includes means for re-activating the image capturing device 106 when the call ends while the support member 102 is in the second configuration, hereinafter referred to as image capturing device re-activating means. For example, when the user ends the call while the support member 102 is in the second configuration, the image capturing device re-activating means re-activates the image capturing device 106, such that the user can resume capturing images when the call ends. Examples of the image capturing device de-activating means and image capturing device re-activating means include, but are not limited to, a processor.

[0031] FIG. 4 is a flow diagram 400 illustrating a method for capturing an image with the mobile phone 100, in accordance with an embodiment of the present invention. To describe the flow diagram 400, reference will be made to FIGS. 1, 2 and 3, although it is understood that the flow diagram 400 can be implemented with reference to any other suitable embodiment of the invention. In addition, the flow diagram 400 can contain a greater or fewer number of steps than shown in FIG. 4.

[0032] At step 402, the method for capturing an image with the mobile phone 100 is initiated. At step 404, the Bluetooth device 202 is reconfigured from the headset to the remote control when the support member 102 is moved from the first configuration to the second configuration. The Bluetooth device 202 is reconfigured to the remote control by the first Bluetooth device reconfiguration means. At step 406, the image capturing device 106 is activated by the image capturing device activating means.
means. For an embodiment, the image capturing device enabling means enables the image capturing device 106 to capture the image when instructed by means of the remote control. At step 408, an image is captured by the image capturing device 106 when instructed by means of the remote control. For an embodiment, the image can be a still image. For another embodiment, the image can be a moving image. Thereafter, the method terminates at step 410.

[0033] For an embodiment, the Bluetooth device 202 is reconfigured from the remote control to the headset when a call is received at the mobile phone 100 while the support member 102 is in the second configuration. The second Bluetooth device reconfiguration means reconfigures the Bluetooth device 202. For this embodiment, the Bluetooth device 202 is reconfigured from the headset to the remote control when the call ends while the support member 102 is in the second configuration. The third Bluetooth device reconfiguration means refigures the Bluetooth device 202.

[0034] Further, to illustrate the invention, an exemplary method for capturing an image by the mobile phone 100 is described. The user rests the mobile phone 100 on a surface 114 by moving the support member 102 to the second configuration. As a result, the first Bluetooth device reconfiguration means reconfigures the Bluetooth device 202 from the headset to the remote control. Further, the mobile phone reconfiguring means reconfigures the mobile phone 100 to a slave device, such that the mobile phone 100 can be controlled by means of the remote control. Moreover, the image capturing device activating means automatically acts the image capturing device 106. Furthermore, the image capturing device enabling means enables the image capturing device 106 to capture the images when instructed by means of the remote control. The image can be a still image or a moving image. The user can open the support member 102 at any angle within a predefined range, and rest the mobile phone 100 on the surface 114 to locate a desired view for capturing an image. In the event the user wants to be included in the captured image, the user can move into the view and instruct the image capturing device 106 to capture the image by using the Bluetooth device 202.

[0035] When a call is received at the mobile phone 100 while the support member 102 is in the second configuration, the second Bluetooth device reconfiguration means reconfigures the Bluetooth device 202 from the remote control to the headset. Further, the image capturing device de-activating means de-activates the image capturing device 106. As a result, the user can attend to the call by using the Bluetooth device 202 as the headset. When the user ends the call, the third Bluetooth device reconfiguration means reconfigures the Bluetooth device 202 to the remote control, to enable the user to capture the image by using the Bluetooth device 202 as a remote control. Further, the image capturing device re-activating means re-activates the image capturing device 106 when the call ends. The user can again get back to capturing the image by using the Bluetooth device 202 as the remote control.

[0036] As described above, various embodiments of the present invention provide a method and system for capturing an image with a mobile phone. Various embodiments of the present invention provide several advantages. One of the advantages is that the lens of the image capturing device can be raised substantially above the surface with the support member in the second configuration. This reduces restrictions in locating a view, caused by the surface on which the mobile phone rests. Further, the invention enables the user to vary the view for capturing the image by varying the angle of the support member, relative to the side portion, in the second configuration. Another advantage is that the invention provides an integrated and portable solution for stabilizing mobile phones. The user can carry the mobile phone with the support member in the first configuration, and move the support member to the second configuration to stabilize the mobile phone. Moreover, the present invention enables the user to remotely capture an image with the Bluetooth device. Moreover, the user is not required to carry a separate device to function as the remote control for the device capturing device, as the present invention enables the Bluetooth device, which is used as a headset, to function as a remote control as well.

[0037] It will be appreciated that the mobile phone with a support member described herein may comprise one or more conventional processors and unique stored program instructions that control the one or more processors, to implement, in conjunction with certain non-processor circuits, some, most, or all of the functions of the system described herein. The non-processor circuits may include, but are not limited to, signal drivers, clock circuits, power source circuits, and user input devices. As such, these functions may be interpreted as steps of a method to capture an image by the mobile phone with support member. Alternatively, some or all the functions could be implemented by a state machine that has no stored program instructions, or in one or more application-specific integrated circuits (ASICs), in which each function, or some combinations of certain of the functions, are implemented as custom logic. Of course, a combination of the two approaches could also be used. Thus, methods and means for these functions have been described herein.

[0038] It is expected that one of ordinary skill, notwithstanding possibly significant effort and many design choices motivated by, for example, available time, current technology and economic considerations, when guided by the concepts and principles disclosed herein, will be readily capable of generating such software instructions, programs and ICs with minimal experimentation.

[0039] In the foregoing specification, the invention and its benefits and advantages have been described with reference to specific embodiments. However, one of ordinary skill in the art would appreciate that various mod-
ifications and changes can be made without departing from the scope of the present invention, as set forth in the claims below. Accordingly, the specification and figures are to be regarded in an illustrative rather than a restrictive sense, and all such modifications are intended to be included within the scope of the present invention.

The benefits, advantages, solutions to problems, and any element(s) that may cause any benefit, advantage or solution to occur or become more pronounced are not to be construed as critical, required or essential features or elements of any or all the claims. The invention is defined solely by the appended claims, including any amendments made during the pendency of this application, and all equivalents of those claims, as issued.

Claims

1. A mobile phone comprising:

   a housing (104);
   a support member (102) pivotally coupled to the housing (104), the support member (102) movable between a first configuration and a second configuration,
   the support member (102) aligned substantially parallel to a side portion (108) of the housing (104) in the first configuration and the support member (102) extending at an angle relative to the side portion (108) of the housing (104) in the second configuration, the support member (102) supporting the housing (104) in an upright position when in the second configuration; and
   an image capturing device (106) integrated with the housing, the image capturing device (106) being capable of being controlled remotely.

2. The mobile phone of claim 1, wherein the support member (102) comprises:

   a stand (116) for resting the mobile phone on a surface, wherein a first end of the stand (116) rests on the surface, and a second end of the stand (116) is coupled to the side portion (108) of the housing (104); and
   a hinge (118) for pivotally coupling the second end with the side portion (108) of the housing (104), wherein the hinge (118) allows the stand (116) to open at predefined angles relative to the side portion (108) of the housing (104).

3. The mobile phone of claim 1 further comprising a reconfiguring module (302) comprising:

   means for reconfiguring a Bluetooth device (202) from a headset to a remote control when the support member (102) is in the second configuration, wherein the slave device can be controlled by the remote control.

4. The mobile phone of claim 3, wherein the reconfiguring module (302) further comprises means for automatically activating the image capturing device (106) when the support member (102) is in the second configuration.

5. The mobile phone of claim 3, wherein the reconfiguring module (302) further comprises means for enabling the image capturing device (106) to capture an image when instructed by the remote control.

6. The mobile phone of claim 3, wherein the reconfiguring module (302) further comprises:

   means for de-activating the image capturing device (106) automatically when a call is received at the mobile phone (100); and
   means for re-activating the image capturing device (106) automatically when the call ends; wherein the support member (102) is in the second configuration when the call is received and when the call ends.

7. The mobile phone of claim 1, wherein an image captured by the image capturing device (106) is selected from the group comprising a still image and a moving image.

8. The mobile phone comprising:

   a housing (104);
   a support member (102) pivotally coupled to the housing (104), the support member (102) being movable between a first configuration and a second configuration, the support member (102) aligned substantially parallel to a side portion (108) of the housing (104) in the first configuration and the support member (102) extending at an angle relative to the side portion (108) of the housing (104).

9. A mobile phone comprising:

   a housing (104);
   a support member (102) pivotally coupled to the housing (104), the support member (102) being movable between a first configuration and a second configuration, the support member (102) aligned substantially parallel to a side portion (108) of the housing (104) in the first configuration and the support member (102) extending at an angle relative to the side portion (108) of the housing (104).
the side portion (108) of the housing (104) in the second configuration, the support member (102) supporting the housing (104) in an upright position when in the second configuration; and an image capturing device (106) integrated with the housing, (104) the image capturing device (106) being capable of being controlled remotely: a Bluetooth device (202) capable of functioning as a headset and a remote control; and a reconfiguring module (302) comprising:

- means for reconfiguring the Bluetooth device (202) from the headset to the remote control when the support member (102) is in the second configuration; and
- means for enabling the image capturing device (106) to capture an image when instructed by the remote control.

10. The mobile phone of claim 9, wherein the support member (102) comprises:

- a stand (116) for resting the mobile phone (100) on a surface, wherein a first end of the stand (116) rests on the surface, and a second end of the stand (116) is coupled to the side portion (108) of the housing (104); and
- a hinge (118) for pivotally coupling the second end with the side portion (108) of the housing (104), wherein the hinge (118) allows the stand (116) to open at predefined angles relative to the side portion (108) of the housing (104).

11. The mobile phone of claim 9, wherein the reconfiguring module (302) further comprises means for reconfiguring the mobile phone (100) into a slave device when the support member (102) is in the second configuration, wherein the slave device can be controlled by the remote control.

12. The mobile phone of claim 9, wherein the reconfiguring module (302) further comprises means for automatically activating the image capturing device (106) when the support member (102) is in the second configuration.

13. The mobile phone of claim 9, wherein the reconfiguring module (302) further comprises:

- means for reconfiguring the Bluetooth device (202) from the remote control to the headset when a call is received at the mobile phone (100); and
- means for reconfiguring the Bluetooth device (202) from the headset to the remote control when the call ends; wherein the support member (102) is in the second configuration when the call is received and when the call ends.

14. The mobile phone of claim 9, wherein the reconfiguring module (302) further comprises:

- means for de-activating the image capturing device (106) automatically when a call is received at the mobile phone (100); and
- means for re-activating the image capturing device (106) automatically when the call ends; wherein the support member (102) is in the second configuration when the call is received and when the call ends.

15. The mobile phone of claim 9, wherein the image is selected from the group comprising a still image and a moving image.

16. A method for capturing an image with a mobile phone (100), the mobile phone (100) comprising a Bluetooth device (202) capable of functioning as a headset and a remote control, an image capturing device (106), and a support member (102) pivotally coupled to the housing (104), the support member (102) movable between a first configuration and a second configuration, the method comprising:

- reconfiguring the Bluetooth device (202) from the headset to the remote control when the support member (102) is moved from the first configuration to the second configuration;
- activating the image capturing device (106) when the support member is moved from the first configuration to the second configuration;
- capturing the image by the image capturing device (106) when instructed by the remote control.

17. The method of claim 16 further comprising:

- reconfiguring the Bluetooth device (202) from the remote control to the headset when a call is received at the mobile phone (100); and
- reconfiguring the Bluetooth device (202) from the headset to the remote control when the call ends; wherein the support member (102) is in the second configuration when the call is received and when the call ends.

18. The method of claim 16, wherein the image is selected from the group comprising a still image and a moving image.
Start

Reconfigure a Bluetooth device from a headset to a remote control when a support member is moved from a first configuration to a second configuration

Activate an image capturing device

Capture an image by the image capturing device when instructed by the remote control

Stop

FIG. 4
## DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
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<th>Citation of document with indication, where appropriate, of relevant passages</th>
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The present search report has been drawn up for all claims.

**Place of search**: The Hague  
**Date of completion of the search**: 8 January 2007  
**Examiner**: de Biolley, Luc

### CATEGORY OF CITED DOCUMENTS

- **T**: theory or principle underlying the invention
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