

APPLICATION DATE: **28 JUNE 2018**

PUBLICATION DATE: **3 JANUARY 2019**

LETSGODIGITAL PUBLICATION DATE : **5 JANUARY 2019**

Samsung Smartphones Linked Magnetically

SOURCE: [WIPO](#)

Patent Claims

1. An electronic device, comprising:

a first housing including:

a first display exposed through a surface of the first housing, and

a first wireless communication module disposed within the first housing;

at least one first cylindrical magnet disposed in a side of the first housing; and

a second housing including:

a second display exposed through a surface of the second housing, and at least one second cylindrical magnet disposed in a side end of the second housing,

wherein at least one of the first cylindrical magnet and second cylindrical magnet is configured to rotate within the first housing and the second housing, respectively, by magnetic attraction of the first cylindrical magnet and second cylindrical magnet being adjacent to each other, and

wherein the first housing and the second housing are coupled to each other by the magnetic attraction of the first cylindrical magnet and the second cylindrical magnet.

at least one processor included in at least one of the first housing and the second housing; and

a memory, connected to the processor, which stores instructions that, when executed, instruct the processor to:

determine a coupled form of the first housing and the second housing;

select at least one of the first display and the second display to display a screen according to the coupled form of the first housing and the second housing, in response to a screen display request; and

control at least one of the first communication module and the second wireless communication module and display the screen on the selected at least one of the first display and the second display.

2. The electronic device of **claim 1**, wherein the instructions further instruct the processor to:

determine execution screen information or execution information of an application; and divide the execution screen information or the execution information of the application to configure screen information for the selected at least one of the first display and the second display according to the coupled form of the first housing and the second housing.

3. The electronic device of **claim 1**, wherein the instructions further instruct the processor to: recognize which of the first display and the second display face a user recognized through sensing information, based on the coupled form of the first housing and the second housing; display an execution screen on one of the first display and the second display facing the user, when the coupled form is a first coupled form in which surfaces opposite the first display and the second display of the first housing and the second housing, respectively, contact each other such that the first display and the second display face opposite directions; and display the execution screen on both of the first display and the second display facing the user, when the coupled form is a second coupled form in which the first housing and the second housing are coupled such that the first display and the second display face a same direction.

4. The electronic device of **claim 3**, wherein the instructions further instruct the processor to: display a home screen on the first display, when the coupled form is the second coupled form and the execution screen is the home screen, and simultaneously display a secondary screen on the second display, the secondary screen including at least one of notification information, news information, use information of the electronic device, frequently used application information, and user setting information.

5. The electronic device of **claim 3**, wherein the instructions further instruct the processor to, when the coupled form is the second coupled form, display a first application execution screen on the first display and display a second application execution screen on the second display.

6. The electronic device of **claim 3**, wherein the instructions further instruct the processor to, when the coupled form is the second coupled form, display a first application execution screen on the first display and display an additional content providing screen related to the first application execution screen on the second display.

7. The electronic device of **claim 3**, further comprising:

an image sensor included in the second housing; and

a sensor configured to obtain sensor information,

wherein the instructions further instruct the processor to:

obtain an image through the image sensor:

output the image obtained through the image sensor to the first display when the coupled form is the first coupled form; and

output the image obtained from the image sensor to the first display, when the coupled form is the second coupled form and the second display is rotated such that the image sensor faces the user, based the sensor information obtained through the sensor.

8. The electronic device of **claim 3**, further comprising an image sensor included in at least one of the first housing and the second housing,

wherein the instructions further instruct the processor to simultaneously display an image obtained through the image sensor on the first display and the second display, in response to a

received camera on request, when the coupled form is the first coupled form.

9. The electronic device of **claim 8**, wherein the camera on request comprises sliding the first housing and the second housing in order to expose the image sensor.

10. The electronic device of **claim 3**, wherein at least one of the first display and the second display further includes a touch panel configured to receive a touch input, and wherein the instructions further instruct the processor to:

display a text input screen in one of the first display and the second display, in response to a received text input request, when the coupled form is the first coupled form; and

display a keypad screen in the one of the first display and the second display that is not displaying the text input screen, in response to the coupled form changing from the first coupled form to the second coupled form.

11. The electronic device of **claim 3**, wherein the instructions further instruct the processor to power off the first display and the second display in response to detection of a third coupled form in which the first display and the second display of the first housing and the second housing, respectively, are covering each other.

12. The electronic device of **claim 2**, further comprising:

a first processor included in the first housing; and

a second processor included in the second housing, the second processor configured to communicate with the first processor through the first wireless communication module and the second wireless communication,

wherein the instructions further instruct the processor to control at least one of the first processor and the second processor to determine a screen control command of the first display and the second display and to transfer the determined screen control command to the other processor.

13. The electronic device of **claim 1**, wherein the instructions enable the processor to output a screen in at least a partial area of the selected display according to a coupled form in which the first housing and the second housing are attached.

14. The electronic device of **claim 1**, wherein the instructions further instruct the processor to activate a component included in at least one of the first housing and the second housing, to execute a specific function in response to magnetic coupling of the first housing and the second housing, and

wherein the component included in at least one of the first housing and the second housing includes at least one of a camera, a sensor, a display, a communication module, and an audio module.

15. The electronic device of **claim 1**, wherein the first cylindrical magnet is configured to rotate within the first housing, and the second cylindrical magnet is configured to rotate within the second housing, and

wherein the first housing and the second housing are coupled at a predetermined angle by a rotation to change positions of shafts of magnetic attraction of the first cylindrical magnet and the second cylindrical magnet.

16. The electronic device of **claim 15**, wherein the first cylindrical magnet and the second cylindrical magnet each include a plurality of odd-numbered cylindrical magnets of a

predetermined size in a single shaft.

17. The electronic device of **claim 15**, further comprising:

a hinge portion connected to both ends of each of the first cylindrical magnet and the second cylindrical magnet and having a plurality of grooves in a sawtooth shape;

a protruding portion coupled to the hinge portion to support the first cylindrical magnet and the second cylindrical magnet within the first housing and the second housing, respectively, and protruded in an engagement form with a groove of the plurality of grooves included in the hinge portion;

a spring configured to adjust elasticity of the protruding portion due to a curvature of the groove; and

an angle adjustment portion configured to adjust a shaft angle of magnetic attraction of the first cylindrical magnet and the second cylindrical magnet by coupling the hinge portion, the protruding portion, and the groove.

18. The electronic device of **claim 15**, wherein a side surface in which the first cylindrical magnet is disposed within the first housing is formed in a sawtooth shape and a side surface in which the second cylindrical magnet is disposed within the second housing is formed in a sawtooth shape, such that each of the sawtooth shapes engages when the first housing and the second housing are coupled at a predetermined angle.

19. The electronic device of **claim 1**, wherein a side in which the first cylindrical magnet is disposed within the first housing is configured to have at least three surfaces, and a side in which the second cylindrical magnet is disposed within the second housing is configured to have at least three surfaces.

20. A method of operating a screen of an electronic device including a first housing having a first display and a first cylindrical magnet disposed on the first housing; and a second housing having a second display and a second cylindrical magnet disposed on the second housing, wherein the first housing and the second housing are coupled to each other by magnetic attraction of the first cylindrical magnet and the second cylindrical magnet, the method comprising:

detecting a screen display request in at least one of the first display and the second display;

determining a coupled form of the first housing and the second housing;

selecting at least one of the first display and the second display to display a screen according to the coupled form of the first housing and the second housing; and

individually or simultaneously displaying a screen in the selected at least one of the first display and the second display based on a screen configuration of the coupled form.