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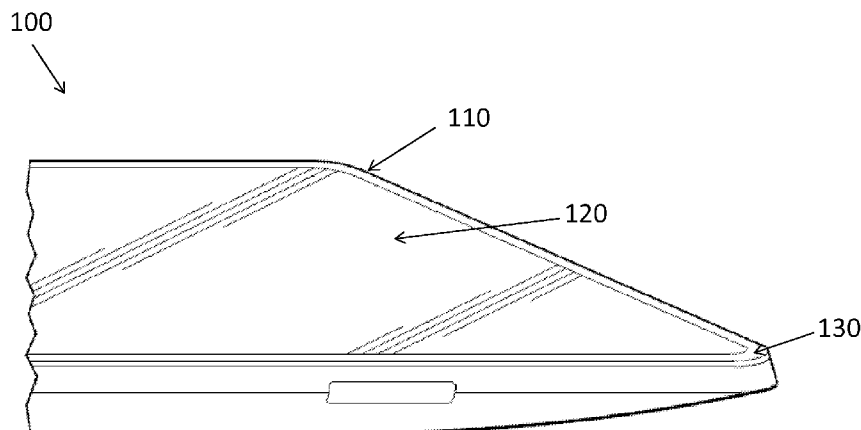


FIG. 1

(57) Abstract: An example display assembly consistent with the present disclosure includes a display screen. The display screen has a perimeter and is suitable for an electronic device. The display assembly also includes a bezel, which is positioned around the perimeter of the display screen. The bezel is made of transparent plastic and functions as a protective layer for the display screen.



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DISPLAY ASSEMBLY

BACKGROUND

[0001] Electronic devices such as desktop computers, mobile phones, and notebook computers are assembled with a main body and a display. More specifically, the display may include a back cover, a bezel and a display panel. The display panel is assembled between the back cover and the bezel, and is exposed by an opening in the bezel, so the user can see the display images. Besides the surface of the display facing the user having a display panel, the display further includes bezel parts surrounding the display panel. In some implementations, there may be a light emitting element disposed on the bezel parts to display scene light, then the user can see the display images with better visual comfort.

BRIEF DESCRIPTION OF THE DRAWINGS

[0002] Examples are described in the following detailed description and in reference to the drawings, in which:

[0003] Fig. 1 illustrates an example system in accordance with an implementation of the present disclosure; and

[0004] Fig. 2 illustrates a side view of an example display assembly in accordance with an implementation.

DETAILED DESCRIPTION

[0005] Various aspects of the present disclosure are directed to display assemblies including a bezel apparatus for a display screen of a display device. More specifically, and as described in greater detail below, various aspects of the present disclosure are directed to a manner by which a glass like bezel is built into a display assembly.

[0006] Aspects of the present disclosure described herein disclose providing an edge to edge glass like bezel built into a display device. Among other things, this approach allows using a bezel made from a material which is not fragile and thus, which provides a protective barrier for the inner display glass.

[0007] Moreover, aspects of the present disclosure described herein replace a typical metal bezel with transparent material that gives the appearance of edge to edge glass. The aspects of the present disclosure described herein provide seamless

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appearance without eliminating the use of bezel in the display device. Among other things, this approach may provide an esthetically pleasing appearance while protecting the display glass from damage in case of a physical impact to the display device. Further, among other things, this approach may provide a more affordable option to have the edge to edge glass appearance without having to use display screen glass, which can be expensive.

[0008] In one example in accordance with the present disclosure, a display assembly is provided. The display assembly comprises a display screen having a perimeter, and being suitable for an electronic device, and a bezel positioned around the perimeter of the display screen, wherein the bezel is made of transparent plastic and functions as a protective layer for the display screen.

[0009] In another example in accordance with the present disclosure, a system is provided. The system comprises a display screen having a perimeter, a transparent plastic bezel positioned around the perimeter of the display screen to provide a protective layer, and a body comprising a memory storing instructions to be executed by a processor to display images on the display screen.

[0010] Fig. 1 illustrates a system 100 in accordance with an implementation. It should be readily apparent that the present illustration should not be interpreted to be limited by this particular illustrative architecture shown in Fig. 1, and the system 100 represents a generalized illustration and that other elements may be added or the illustrated elements may be removed, modified, or rearranged in many ways. For example, while the system 100 depicted in Fig. 1 includes only one layer of bezel, the system may actually comprise any number of layers of bezel, and only one has been shown and described for simplicity. The system 100 comprises a display assembly 110 and a body 140. The display assembly 110 comprises a display screen 120 and a bezel 130 positioned around the perimeter of the display screen 120.

[0011] In Fig. 1, the system 100 is shown as a notebook computer, but it should be noted that the system 100 may be any type of computing device, which includes one of various computing devices that work with a display screen portion. The computing devices may include, but not limited, to any one of various a desktop computer, notebook computer, workstation, tablet computer, mobile phone, smart device, server, or any other processing device or equipment that includes a display screen and a processor. When the display screen portion of the device is docked and/or mounted, the device operates as a stationary computing device (e.g., personal computers (i.e., desktops), server computers, laptop computers (with permanently attached display screens), all in one

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devices, and other similar devices that possess comparable characteristics). On the other hand, when the display screen portion is not docked, the device operates as a handheld device. In another example, the computing device 100 may be a mobile or handheld device that does not include hardware components.

[00012] The display assembly 110 may include a transparent liquid crystal display (LCD), an organic light emitting diode (OLED) display, a plasma display, or any other suitable display. The display assembly 110 may be part of the computing device 100 (e.g., when the computing device 100 is all in one device), may be a separated component that is in electronic communication with the computing device 100, and may be a detachable component that may also be used as a handheld device. The display assembly 110 is to display content from one or more applications running on the computing device 100 on a window shown on the display screen 120. In one implementation, the display screen 120 comprises various display properties such as resolution, display pixel density, display orientation and/or display aspect ratio. The display screen 120 may be of different sizes and may support various types of display resolution, where display resolution is the number of distinct pixels in each dimension that can be displayed on the display screen 120. For example, the display screen 120 may support display resolutions of 640x480, 800x600, 1024x768, 1920x1080, or any other suitable display resolutions. When the display screen supports a 1920x1080 display resolution, 1920 is the total number of pixels across the height of the display screen 120 and 1080 is the total number of pixels across the width of the display screen 120. Moreover, the display screen 120 properties may also include input device properties such as touch-screen type, navigation method (e.g., touch-screen, trackball, scroll-wheel, etc.), keyboard availability, and the like.

[00013] The bezel 130 is built into the display assembly 110. More specifically, the bezel is mounted onto the display screen during production (e.g., manufacturing). The bezel 130 is connected to the display screen 120 around the screen's perimeter edge, surrounding the outer edge of the display glass. The bezel 130 functions as a protective frame or support for the device 100. In other implementations, the bezel 130 may perform other functions. The bezel 130 does not overlay the image-displaying portion (e.g., the display screen 120) of the display assembly 110, and the other portion of the device 100. In one implementation, there may be a gap between the bezel 130 and the display screen 120. For example, the gap may be 0.3mm. The size of the gap may be smaller in implementations where the display glass is cut by equipment utilizing laser technology. The bezel 130 is made of a transparent material such as plastic. With the

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use of transparent plastic, the bezel 130 provides edge to edge glass appearance while providing protection for the display screen 120.

[00014] In some implementations, the bezel 130 comprises bezel portions. The bezel portions may enclose display drive electronics, as well as backlighting hardware to backlight the display screen 120, such as edge light emitting diodes (LEDs). The bezel portions may have a particular width, such as between 3 mm and 10 mm, for example.

[00015] The body 140 of the system 100 may comprise the hardware components of the computing device. For example, any computing device described herein may include a processor and memory. The computing device or system 100 includes, but may not be limited to, a processor (e.g., a central processing unit, a microprocessor, a microcontroller, or another suitable programmable device), a memory unit, input interfaces, and a communication interface. Each of these components or any additional components of the computing device 100 may be operatively coupled to a bus. The bus may be any of several types of bus structures including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. In other examples, the computing device 100 includes additional, fewer, or different components for carrying out similar functionality described herein.

[00016] The processor includes a control unit and may be implemented using any suitable type of processing system where at least one processor executes computer-readable instructions stored in the memory. The processor may be, for example, a central processing unit (CPU), a semiconductor-based microprocessor, an application specific integrated circuit (ASIC), a field-programmable gate array (FPGA) configured to retrieve and execute instructions, other electronic circuitry suitable for the retrieval and execution instructions stored on a computer readable storage medium (e.g., the memory), or a combination thereof. The machine readable medium may be a non-transitory computer-readable medium that stores machine readable instructions, codes, data, and/or other information. The instructions, when executed by processor (e.g., via one processing element or multiple processing elements of the processor) can cause processor to perform processes described herein.

[00017] Further, the computer readable medium may participate in providing instructions to the processor for execution. The machine readable medium may be one or more of a non-volatile memory, a volatile memory, and/or one or more storage devices. Examples of non-volatile memory include, but are not limited to, electronically erasable programmable read only memory (EEPROM) and read only memory (ROM).

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Examples of volatile memory include, but are not limited to, static random access memory (SRAM) and dynamic random access memory (DRAM). Examples of storage devices include, but are not limited to, hard disk drives, compact disc drives, digital versatile disc drives, optical devices, and flash memory devices. As discussed in more detail above, the processor may be in data communication with the machine readable medium, which may include a combination of temporary and/or permanent storage. The machine readable medium may include program memory that includes all programs and software such as an operating system, user detection software component, and any other application software programs. The machine readable medium may also include data memory that may include multicast group information, various table settings, and any other data required by any element of the ASIC. The processor includes a control unit and may be implemented using any suitable type of processing system where at least one processor executes computer-readable instructions stored in the memory.

[00018] Fig. 2 illustrates a side view of an example display assembly 200 in accordance with an implementation. The system 200 illustrated in Fig. 2 includes a glass like bezel 210 with a mating member 220, and a display screen 230. Although the mating member 220 is shown to have a specific shape, in other implementations, the shape may be different as long as the mating member 220 latches to the body 240 of the device (e.g., the system 100). In some examples, the mating member may be circular or may be shorter or taller than what is shown in Fig. 1.

[00019] As discussed above in reference to Fig. 1, the glass like bezel 210 may be made of transparent plastic. In one implementation, the bezel is made of two-shot transparent plastic as a result of two-shot plastic injection molding producing two color or two component injected molded parts from two different thermoplastic materials in one process. In other implementations, similar materials that provide the appearance of edge to edge glass look while acting as a protective layer for the display screen 230 may be used. Based on the device that the display assembly 200 is being used with, the display screen 230 may have a different thickness. For example, if the device (e.g., the device 100) is a mobile device, then the thickness of the display screen may be thinner. In another example, if the device is a desktop monitor, then the thickness of the display screen may be greater. As also discussed above in reference to Fig. 1, the body 240, which is the rear housing, may be made from metal or plastic.

[00020] The mating member 220 of the glass-like bezel 210 extends into a recess of the body 240 of the device (e.g., the device 100). In some implementation, injection molding can be used as the manufacturing process for producing the mating member

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220. The mating member 220 may be mounted into the body 240 or may be connected to the body 240 with an adhesive. In some implementations, a locking mechanism may be used. Once the mating member 220 is fully inserted into the recess, it may be locked into its location by the aid of the locking mechanism to assure connection between the mating member 220 and the body 240 of the device.

[00021] While the above disclosure has been shown and described with reference to the foregoing examples, it should be understood that other forms, details, and implementations may be made without departing from the spirit and scope of the disclosure that is defined in the following claims.

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WHAT IS CLAIMED IS:

1. A display assembly;
a display screen having a perimeter, and being suitable for an electronic device;
and
a bezel positioned around the perimeter of the display screen, wherein the bezel is made of transparent plastic and functions as a protective layer for the display screen.
2. The display assembly of claim 1, wherein the bezel is built into the display assembly via a mating member.
3. The display assembly of claim 2, wherein the mating member of the bezel is mounted into a recess of the electronic device, the recess located in rear housing of the electronic device.
4. The display assembly of claim 3, wherein the mating member of the bezel is mounted into the recess of the electronic device by an adhesive.
5. The display assembly of claim 3, wherein the mating member is produced by injection molding.
6. The display assembly of claim 5, wherein the bezel is made of two-shot transparent plastic as a result of two-shot plastic injection molding producing two color or two component injected molded parts from two different thermoplastic materials in one process.
7. The display assembly of claim 1, wherein the bezel provides an edge to edge glass appearance for the display assembly.
8. The display assembly of claim 1, wherein the display screen is made of glass.
9. The display assembly of claim 7, wherein the display screen and the bezel have a gap in between, the gap having a width determined by method used to cut the glass for the display screen.

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10. A system, comprising:
 - a display screen having a perimeter;
 - a transparent plastic bezel positioned around the perimeter of the display screen to provide a protective layer; and
 - a body comprising a memory storing instructions to be executed by a processor to display images on the display screen.
11. The system of claim 6, wherein the body is made of a metal.
12. The system of claim 10, wherein the display screen has a width determined based on the system, and wherein the transparent plastic bezel has a width determined based on the width of the display screen.
13. The system of claim 10, wherein the transparent plastic bezel is built into the display screen.

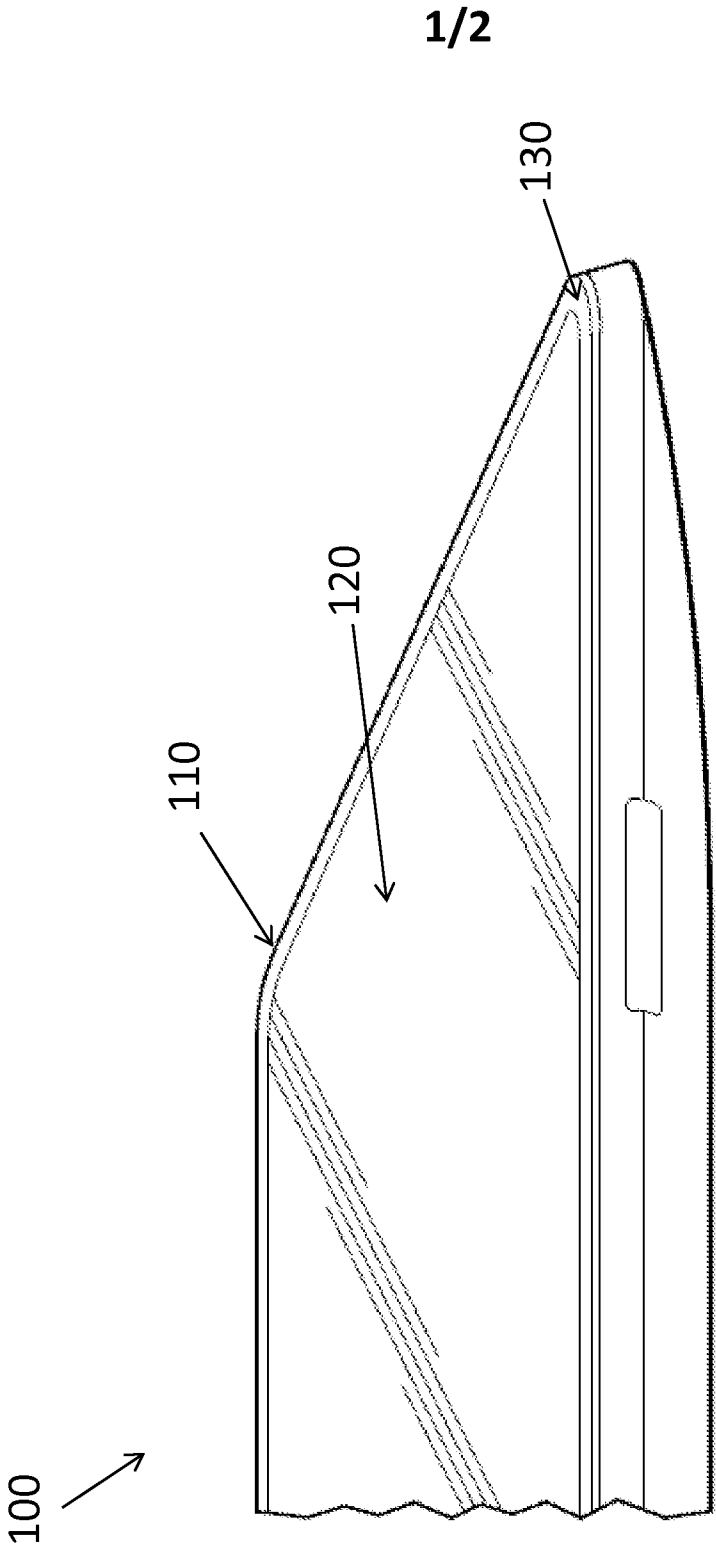


FIG. 1

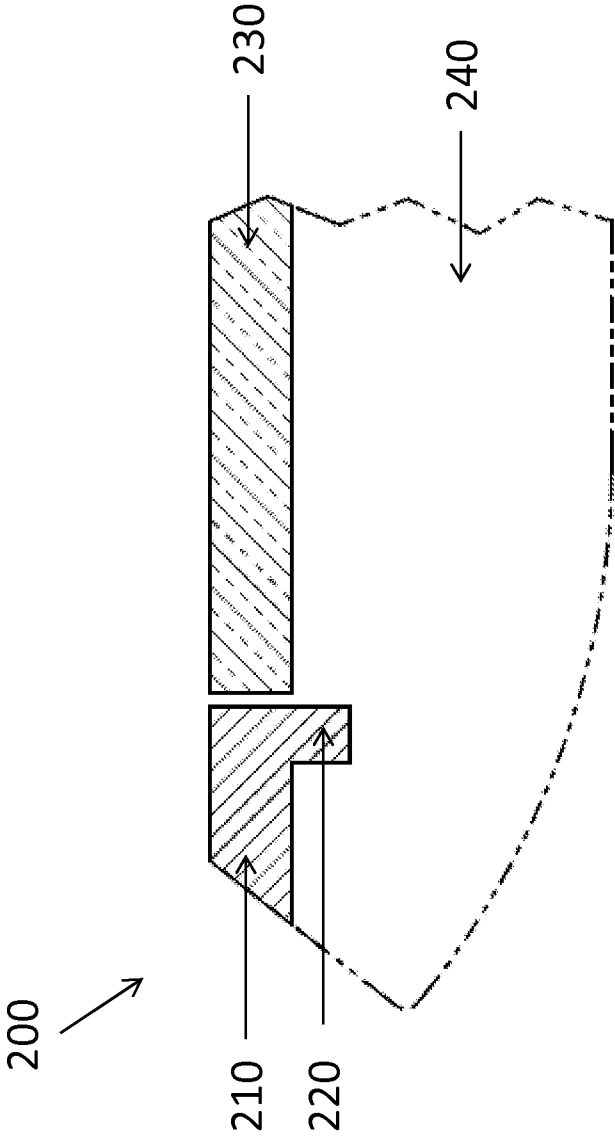


FIG. 2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2014/038289**A. CLASSIFICATION OF SUBJECT MATTER****G09F 9/00(2006.01)i, G06F 1/16(2006.01)i**

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)

G09F 9/00; B23P 11/00; H05K 7/00; H05K 5/00; G06F 3/041; G06F 1/16

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: display, transparent bezel, recess, gap

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 20-0256124 Y1 (HANKOOK TOUCH SCREEN INC.) 13 December 2001 See page 2; claims 1-2; and figure 1.	1, 7-8
Y		2-6, 9-13
Y	JP 2012-173893 A (KYOCERA CORP.) 10 September 2012 See paragraphs [0014], [0037]-[0038]; and figures 2, 14.	2-6, 9
Y	US 2009-0141437 A1 (SCOTT F. GEIGER et al.) 04 June 2009 See paragraph [0029]; and figures 1, 8.	10-13
A	US 2013-0070399 A1 (CHENG-SHING LIU et al.) 21 March 2013 See paragraphs [0011]-[0018]; and figures 1-5.	1-13
A	KR 10-2013-0133483 A (LG DISPLAY CO., LTD.) 09 December 2013 See paragraph [0038]; claim 1; and figures 3-4.	1-13



Further documents are listed in the continuation of Box C.



See patent family annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

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"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

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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