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## (12) United States Patent Kim et al.

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| (54)  | 4) COOLING FAN UNIT AND DISPLAY<br>APPARATUS HAVING THE SAME                                 |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|
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| (73)  | Assignee:  | Samsung Electronics Co., Ltd.,<br>Suwon-si (KR)  |  |  |  |  |  |
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| (51) <b>Int. Cl.</b> <i>G02F 1/1333</i> (2006.01) |  |  |  |  |  |  |  |
| (52)  |  |  |  |  |  |  |  |
| (58)  | <b>Field of Classification Search</b> None See application file for complete search history. |  |  |  |  |  |  |
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#### (57) ABSTRACT

A display apparatus having a casing in which an opening part is formed, includes: a liquid crystal display panel that is supported by the casing so that an image can be displayed through an opening part; a backlight unit that is provided behind the liquid crystal display panel and has a light source that emits light; a shield cover that is provided behind the backlight unit and is supported by at least one of the backlight unit and the casing; and a cooling fan unit that is combined to the shield cover and supplies cooling air to the backlight unit.

## 11 Claims, 6 Drawing Sheets

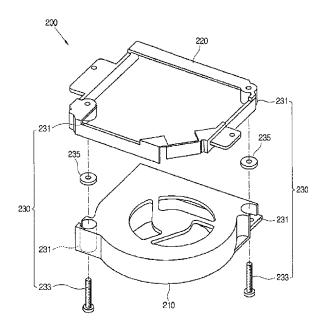
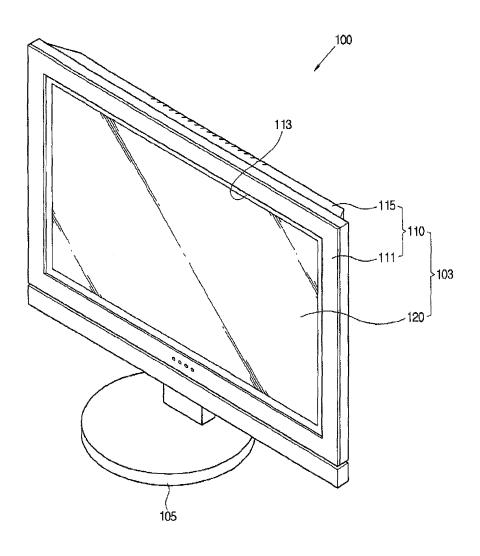




FIG. 1



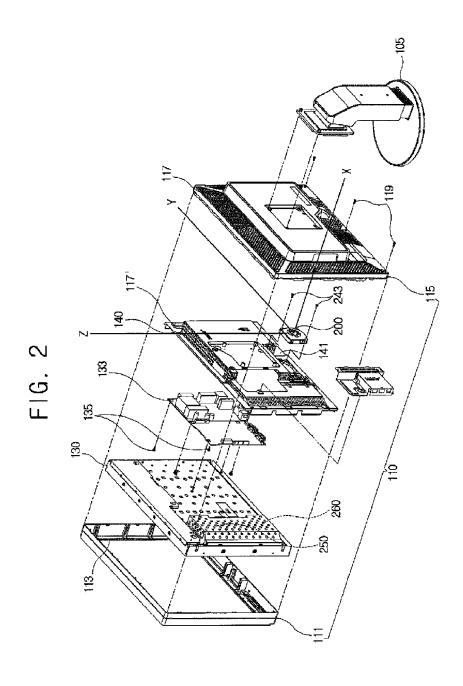




FIG. 3

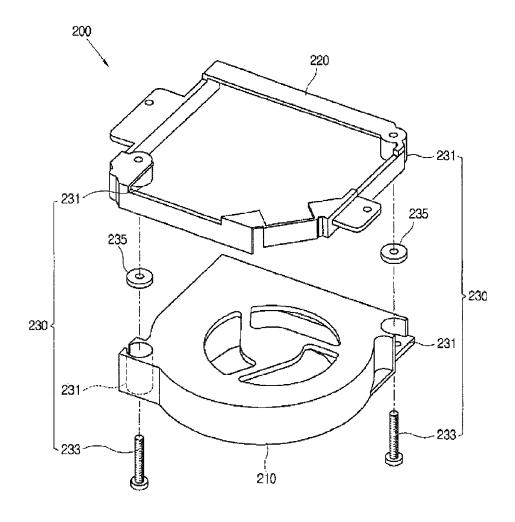
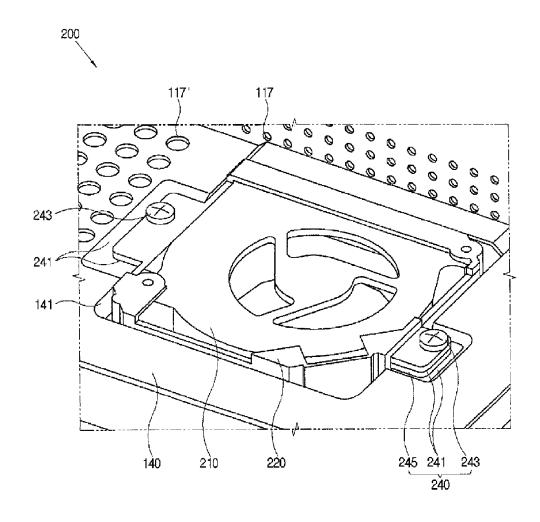


FIG. 4





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