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Park et al.

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(54) **COIL SUBSTRATE FOR WIRELESS CHARGING AND ELECTRIC DEVICE USING THE SAME**

(58) **Field of Classification Search**
CPC H01F 38/14
USPC 320/108
See application file for complete search history.

(71) Applicant: **SAMSUNG ELECTRO-MECHANICS CO., LTD.**, Suwon (KR)

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(73) Assignee: **SAMSUNG ELECTRO-MECHANICS CO., LTD.**, Suwon-Si, Gyeonggi-Do (KR)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 263 days.

(21) Appl. No.: **13/888,692**

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(30) **Foreign Application Priority Data**

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Assistant Examiner — Tessema Kebede

(51) **Int. Cl.**
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H01F 27/34 (2006.01)
H01F 27/36 (2006.01)
H02J 5/00 (2016.01)
H01F 27/28 (2006.01)

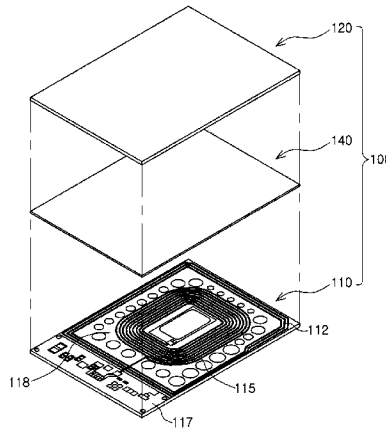
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(52) **U.S. Cl.**
CPC **H01F 38/14** (2013.01); **H01F 27/34** (2013.01); **H01F 27/362** (2013.01); **H02J 5/005** (2013.01); **H01F 27/2804** (2013.01); **H01F 27/2871** (2013.01)

(57) **ABSTRACT**

There are provided a coil substrate which includes a coil for wireless charging and an antenna and is capable of increasing charging efficiency, and an electronic device including the same. The coil substrate according to embodiments of the invention may include a coil pattern; a dummy part formed around the coil pattern; and at least one penetration part formed in the dummy part or in a central portion of the coil pattern.

9 Claims, 5 Drawing Sheets



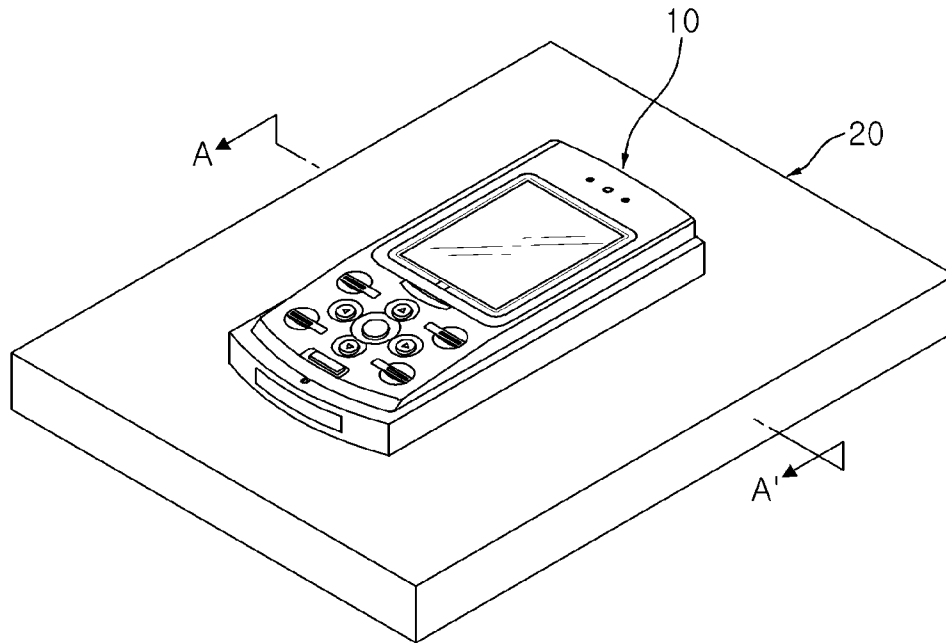


FIG. 1

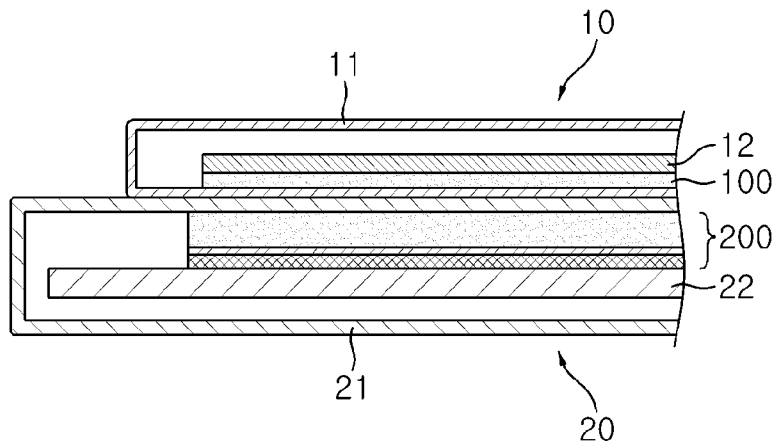


FIG. 2

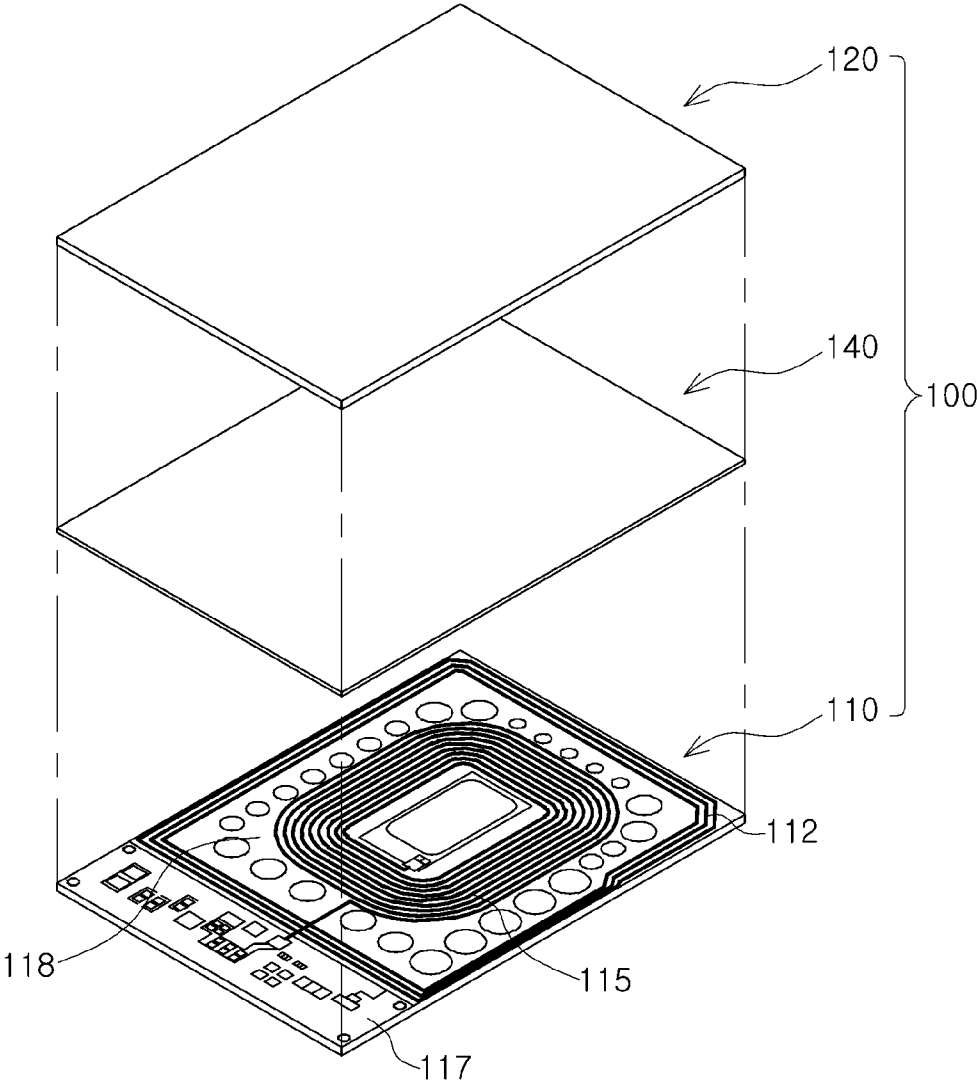


FIG. 3

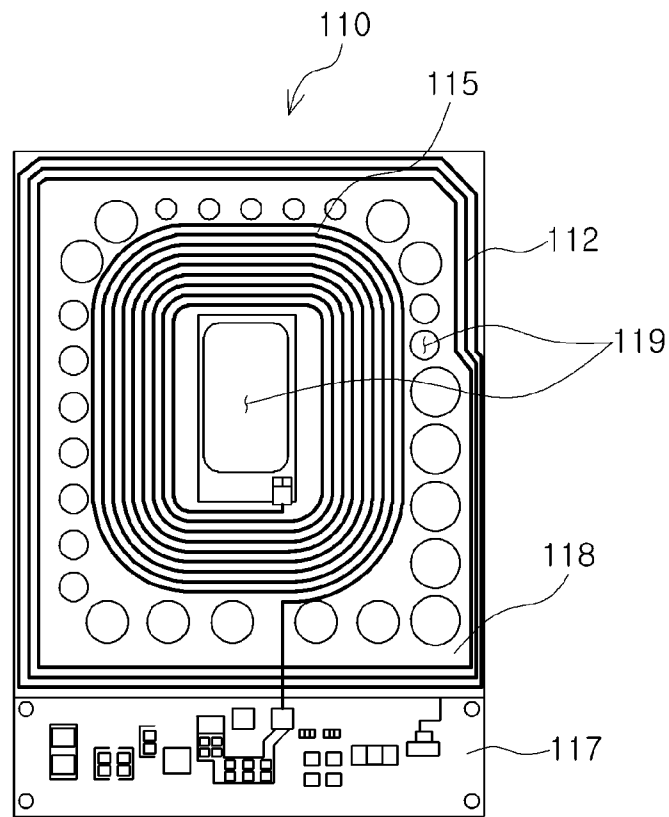


FIG. 4

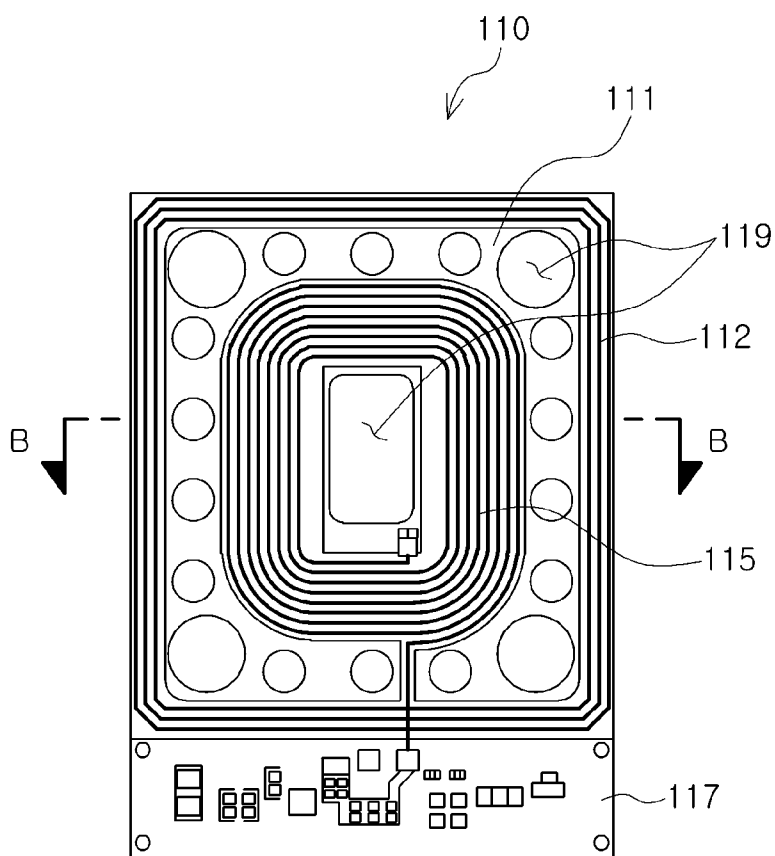


FIG. 5

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