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(12) **United States Patent**
Hidaka et al.

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(54) **ELECTRONIC DEVICE INCLUDING
NON-CONTACT CHARGING MODULE**

(2013.01); **H04B 5/0037** (2013.01); **H04B 5/0093** (2013.01); **H01F 27/2871** (2013.01); **H01F 27/365** (2013.01); **H04B 5/0062** (2013.01)

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(58) **Field of Classification Search**

CPC H02J 7/025; H01F 38/14; Y02T 90/122; B60L 11/182; Y02E 60/12
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See application file for complete search history.

(73) Assignee: **Panasonic Intellectual Property Management Co., Ltd.**, Osaka (JP)

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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 197 days.

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Primary Examiner — Arun Williams

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(57) **ABSTRACT**

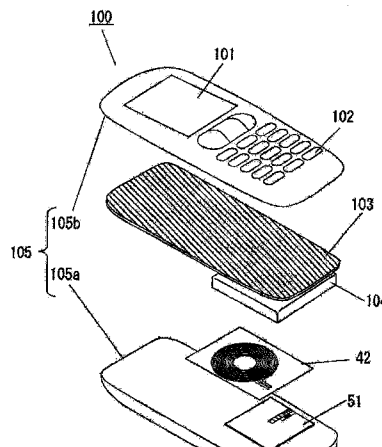
This communication apparatus makes it possible to have a non-contact charging module and a sheet antenna coexist, even in the case where there the non-contact charging module and the sheet antenna in the communication apparatus. The apparatus is provided with: a housing; a secondary-side non-contact charging module, which is housed in the housing, receives power by means of electromagnetic induction, and has a first coil having a conducting wire wound thereon, and a first magnetic sheet facing the first coil; and an NFC antenna, which is housed in the housing, and has a second coil having a conducting wire wound thereon, and a second magnetic sheet facing the second coil. The secondary-side non-contact charging module and the NFC antenna are not laminated to each other.

(51) **Int. Cl.**
H02J 7/00 (2006.01)
H02J 7/02 (2006.01)

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(52) **U.S. Cl.**
CPC **H02J 7/025** (2013.01); **H01F 38/14**

20 Claims, 29 Drawing Sheets



(51) **Int. Cl.**
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H04B 5/00
H01F 27/28
H01F 27/36

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(2006.01)
(2006.01)

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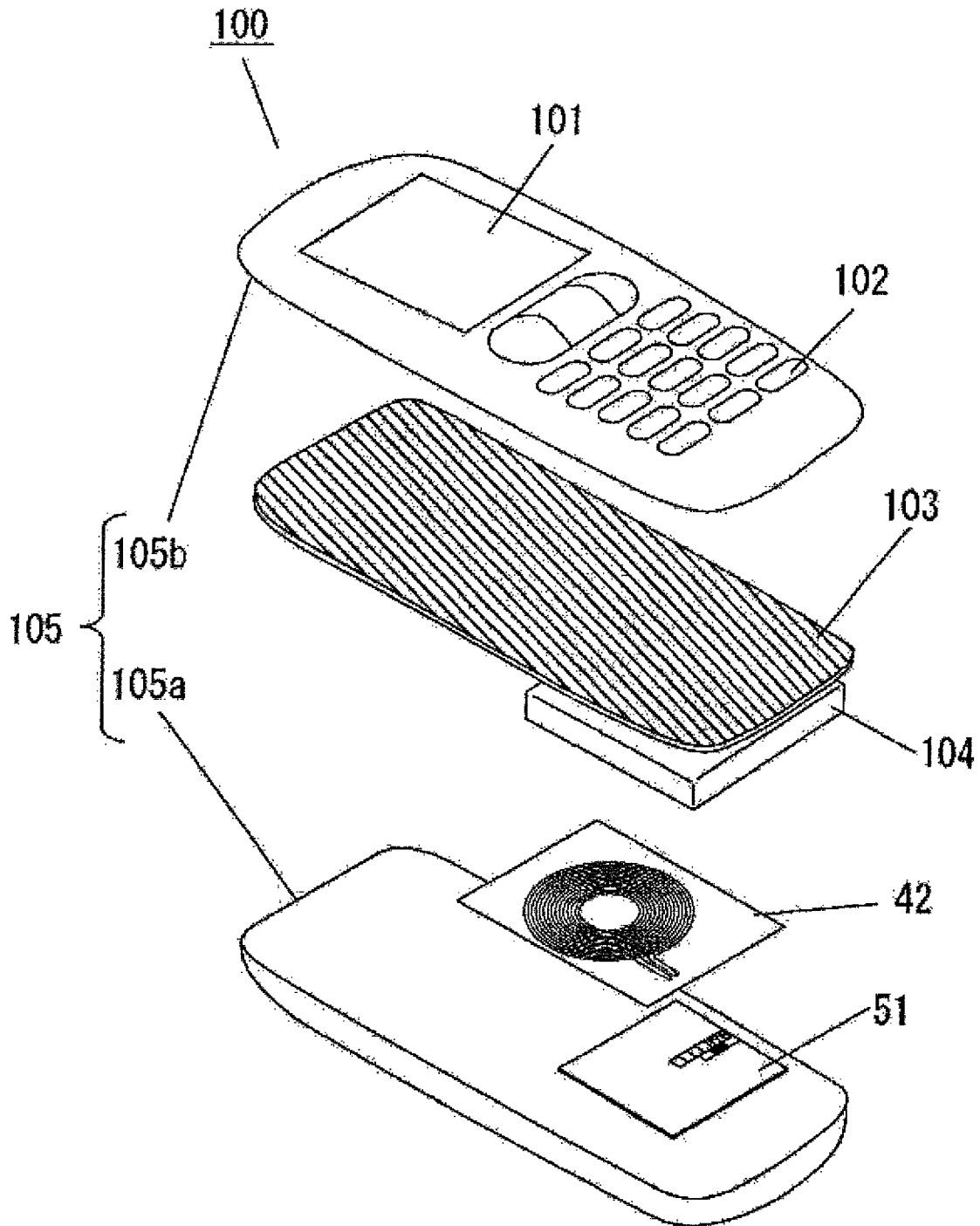


FIG. 1A

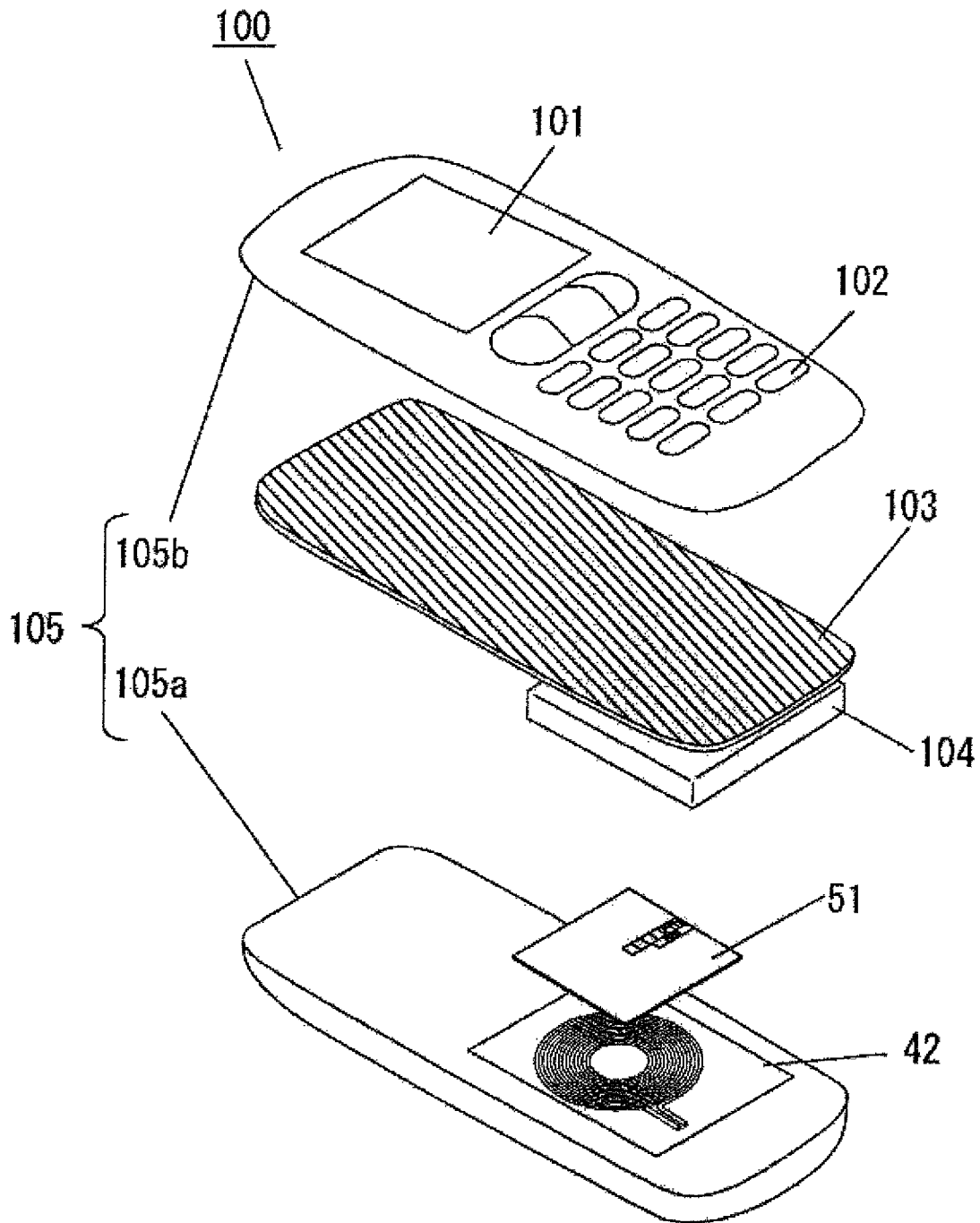


FIG. 1B

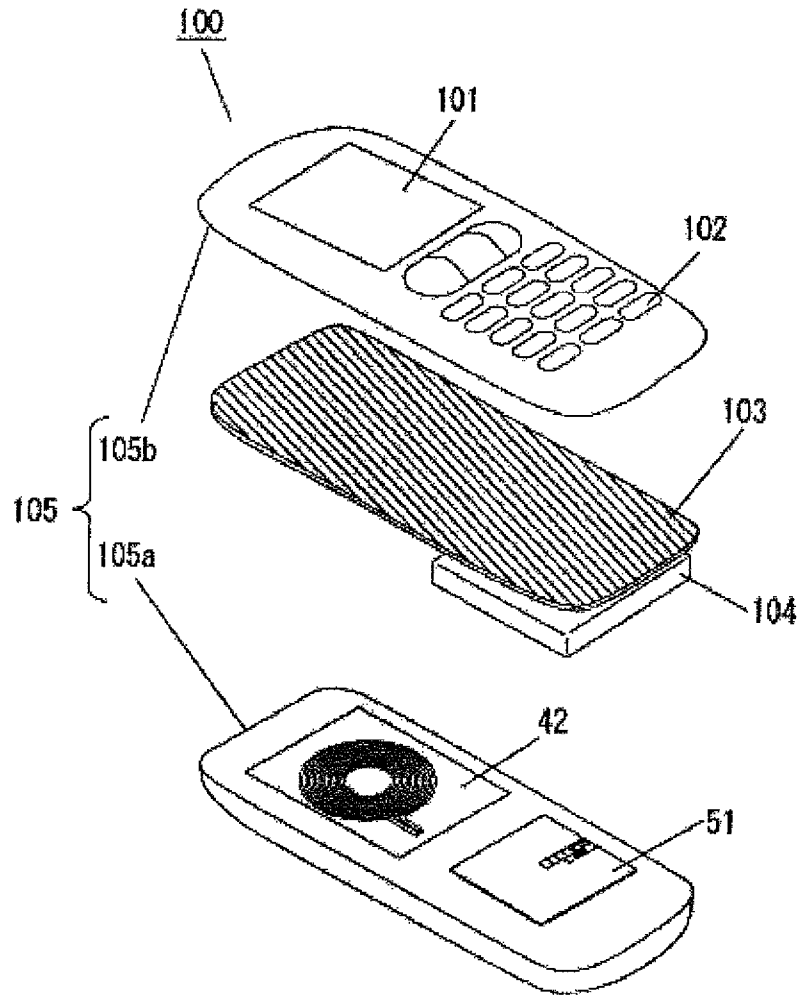


FIG. 1C

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