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**Garrity et al.**

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(54) **APPARATUS, SYSTEM AND METHOD TO WIRELESSLY CHARGE/DISCHARGE A BATTERY**

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**H02J 7/02** (2016.01)  
**H02J 7/04** (2006.01)

(52) **U.S. Cl.**  
 CPC ..... **H02J 7/025** (2013.01); **H02J 7/04** (2013.01)

(58) **Field of Classification Search**  
 CPC .. Y02E 60/12; H02J 7/025; H02J 7/04; H01F 38/14; Y02T 90/122; B60L 11/182  
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 See application file for complete search history.

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Primary Examiner — Yalkew Fantu

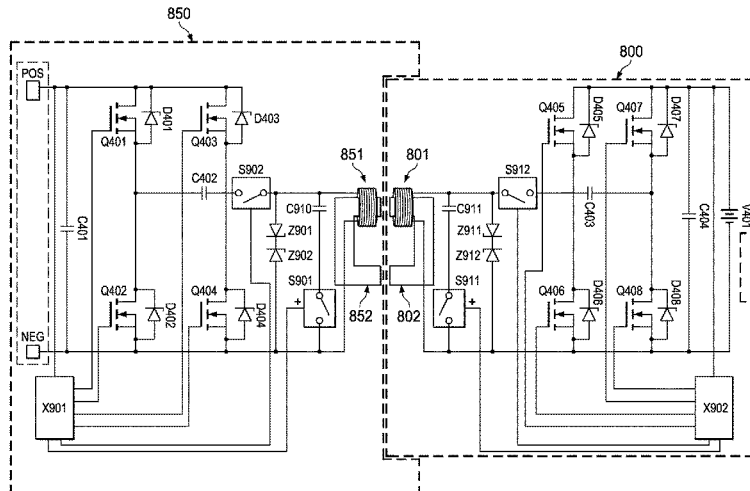
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(57) **ABSTRACT**

An apparatus, system and method to wirelessly charge and/or discharge a battery. In one embodiment, the apparatus includes a removable first magnetic core piecepart having a surrounding first metallic coil and configured to be coupled to and aligned with a second magnetic core piecepart having a surrounding second metallic coil to form a transformer. The apparatus also includes a battery metalically coupled to the first metallic coil and configured to be charged and discharged through an electrically isolating path of the transformer.

**20 Claims, 11 Drawing Sheets**



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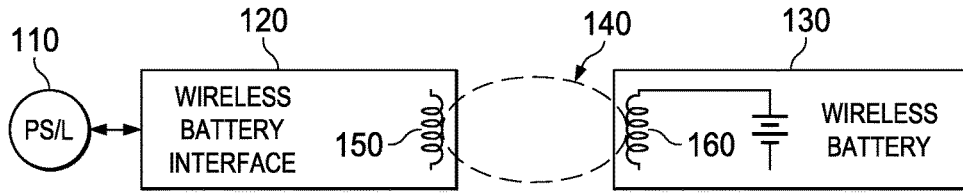


FIG. 1

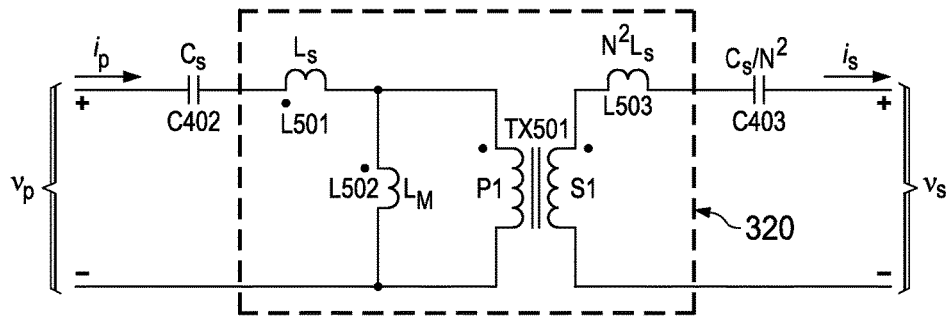


FIG. 3

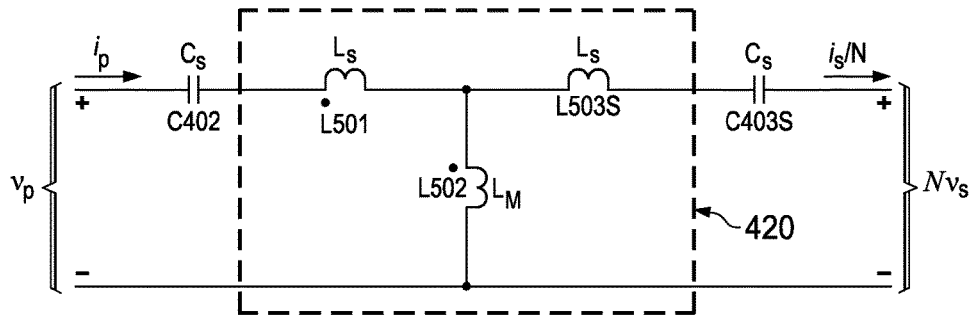


FIG. 4

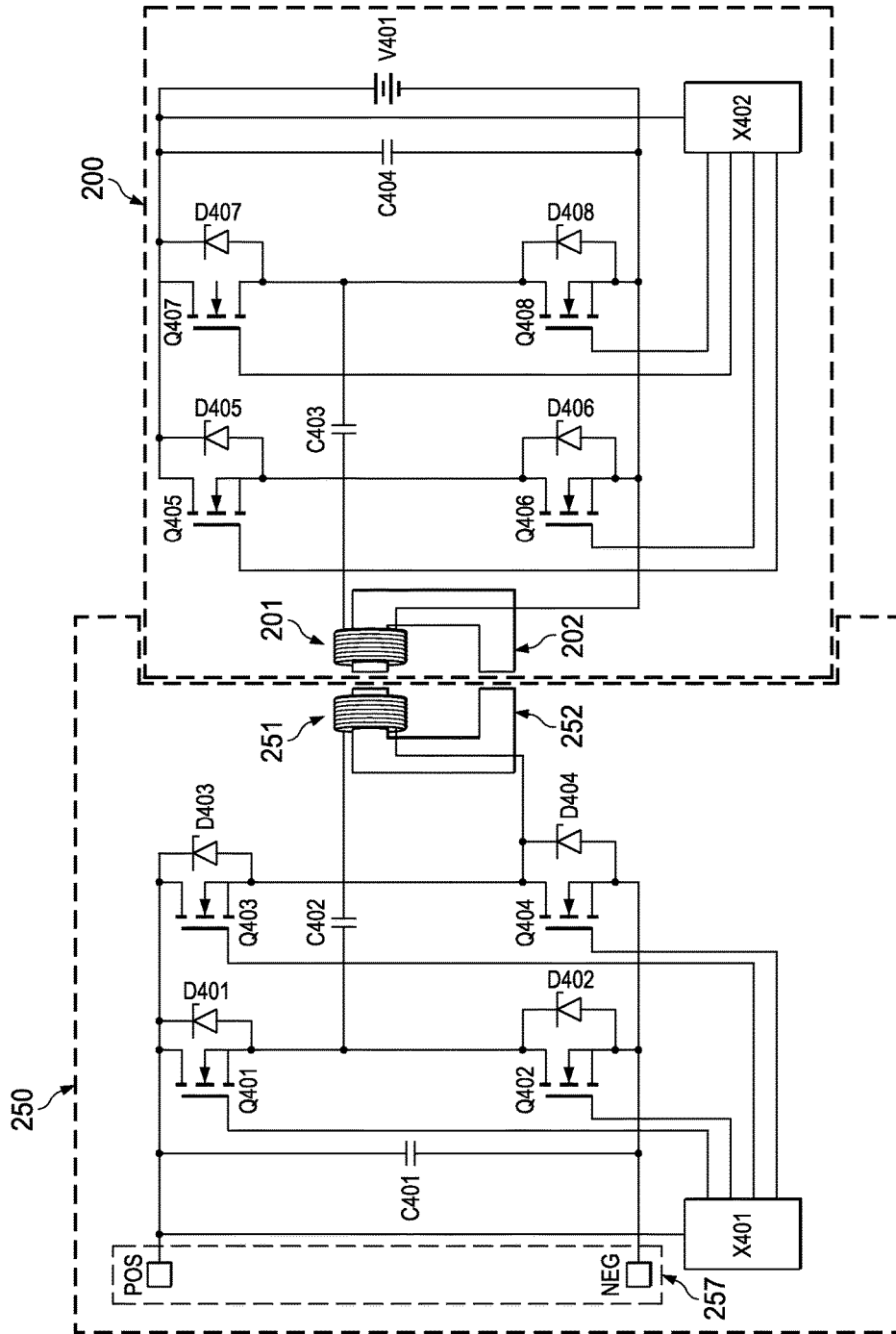
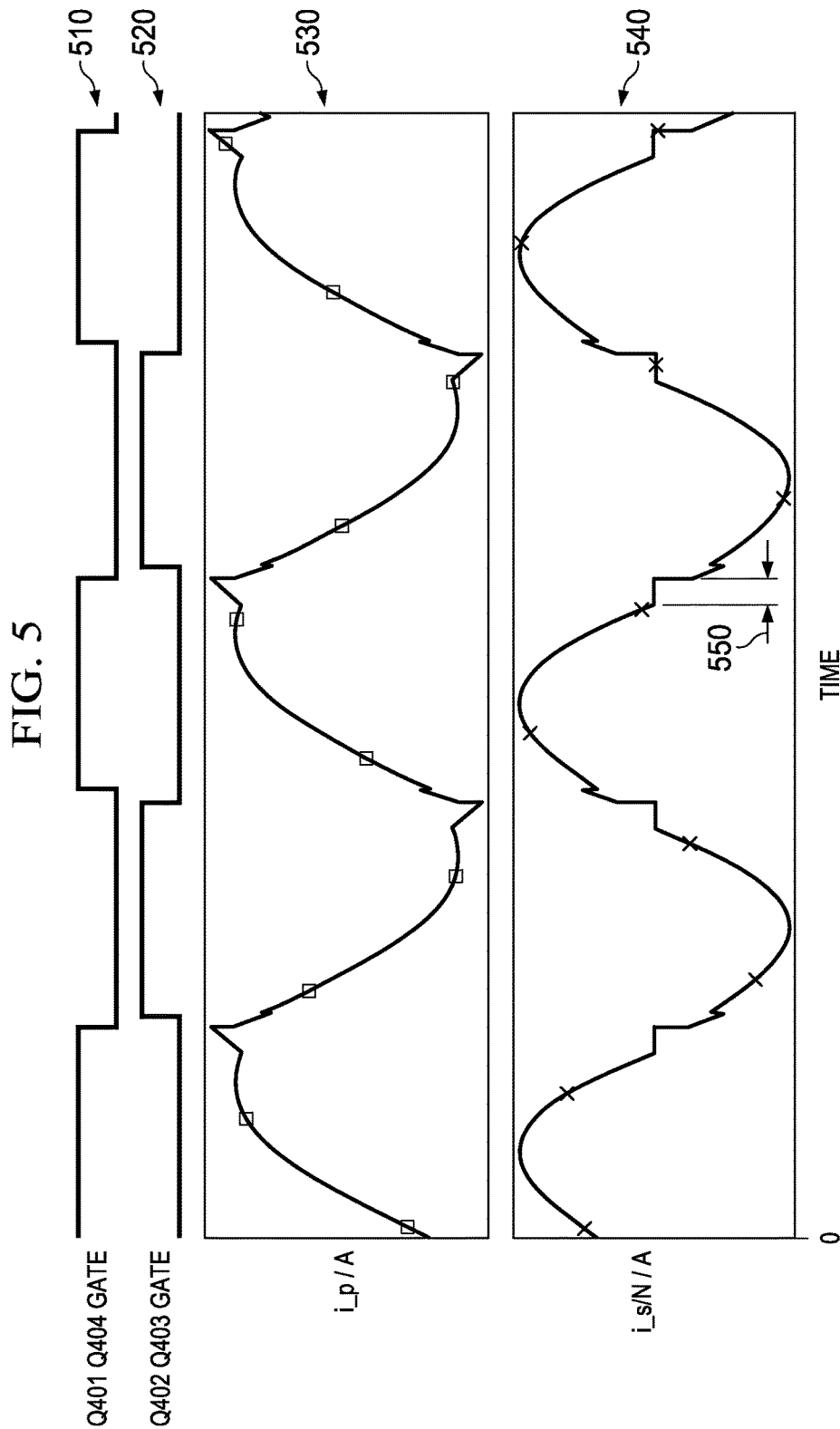


FIG. 2



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