

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

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(54) **PARKING ASSIST SYSTEM FOR VEHICLE, CONTACTLESS POWER TRANSMITTING DEVICE, AND CONTACTLESS POWER RECEIVING DEVICE**

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See application file for complete search history.

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(57) **ABSTRACT**

A parking assist system for a vehicle includes a target position setting unit setting a vehicle target parking position on the basis of a coil type and position of a power transmitting unit. When the coil type is a composite coil having a configuration such that an annular coil wound to surround a first axis and a solenoid coil wound to surround a second axis intersecting with the first axis are serially connected, the target position setting unit sets the target parking position such that a center of a power receiving unit mounted on the vehicle is located at a predetermined distance from the first axis along the second axis. The solenoid coil is set at a position with respect to the annular coil such that the first axis extends through a side face center portion of the solenoid coil.

**12 Claims, 15 Drawing Sheets**

