



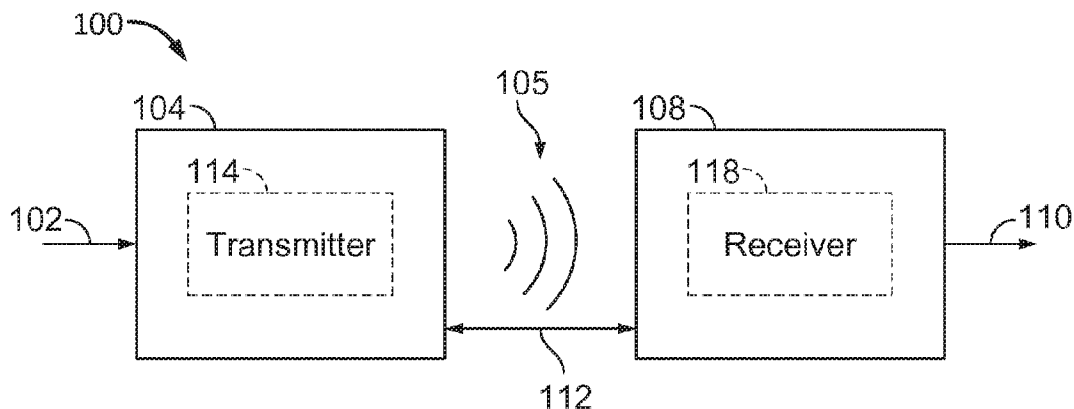
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(19) **United States**(12) **Patent Application Publication**
Davis(10) **Pub. No.: US 2013/0119773 A1**(43) **Pub. Date: May 16, 2013**(54) **SYSTEMS AND METHODS FOR INDUCTION CHARGING WITH A CLOSED MAGNETIC LOOP****Publication Classification**(51) **Int. Cl.**
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USPC **307/104**(75) Inventor: **Roy Howard Davis**, Del Mar, CA (US)(73) Assignee: **QUALCOMM Incorporated**, San Diego, CA (US)(21) Appl. No.: **13/427,726**(22) Filed: **Mar. 22, 2012****Related U.S. Application Data**

(60) Provisional application No. 61/560,135, filed on Nov. 15, 2011.

(57) **ABSTRACT**

Systems, methods, and computer program products for induction charging with a closed magnetic loop are described herein. In one aspect, an apparatus for wireless power transmission comprises a plurality of coplanar coils, each of the plurality of coplanar coils configured to be individually energized and produce a magnetic field. Further, the controller is configured to reverse polarity of the magnetic field of at least one of the plurality of coplanar coils based on a measure of coupling between coils and to select at least two of the plurality of coplanar coils for wireless power transmission based on the measure of coupling between coils.



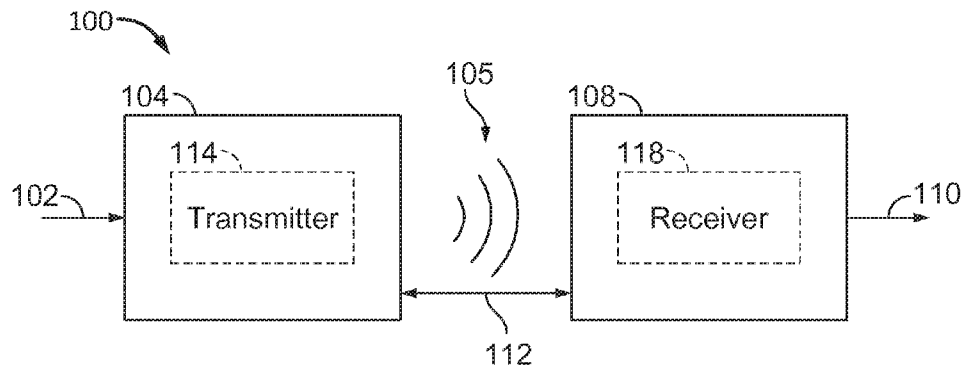


FIG. 1

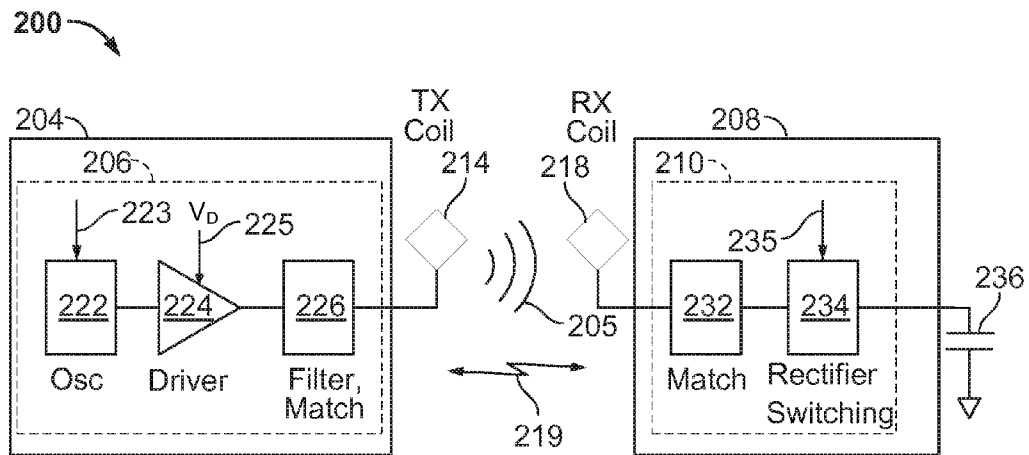


FIG. 2

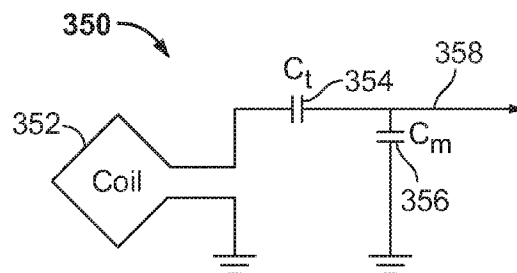


FIG. 3

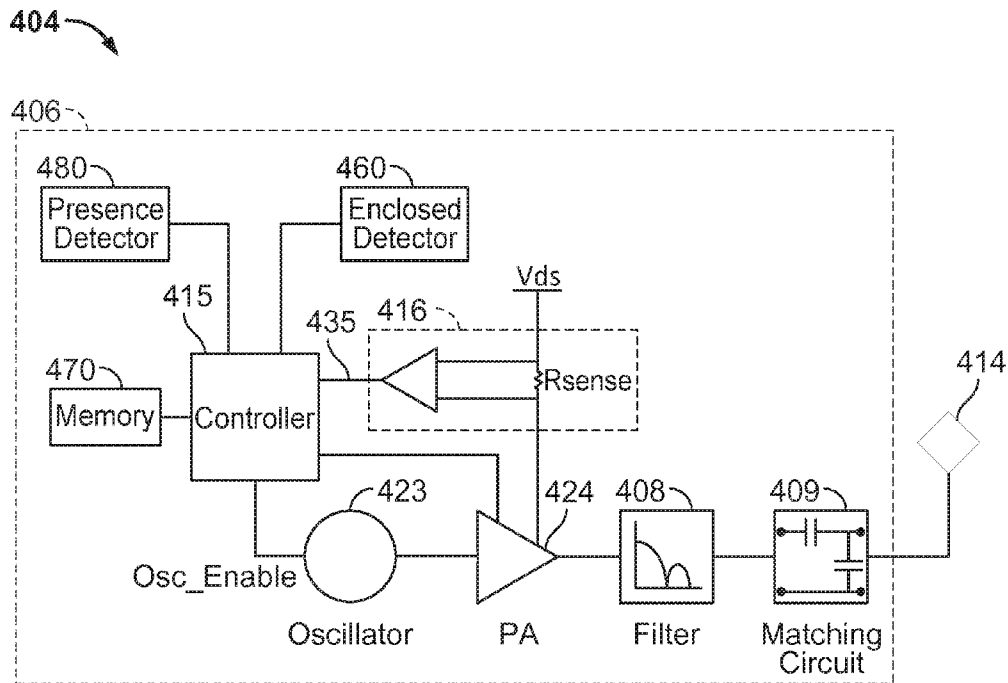


FIG. 4

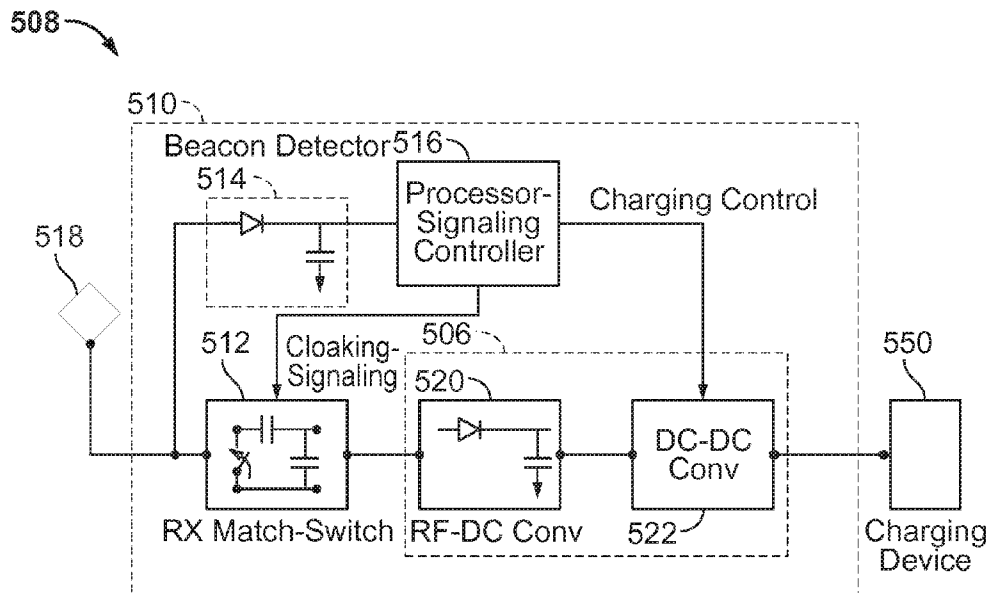


FIG. 5

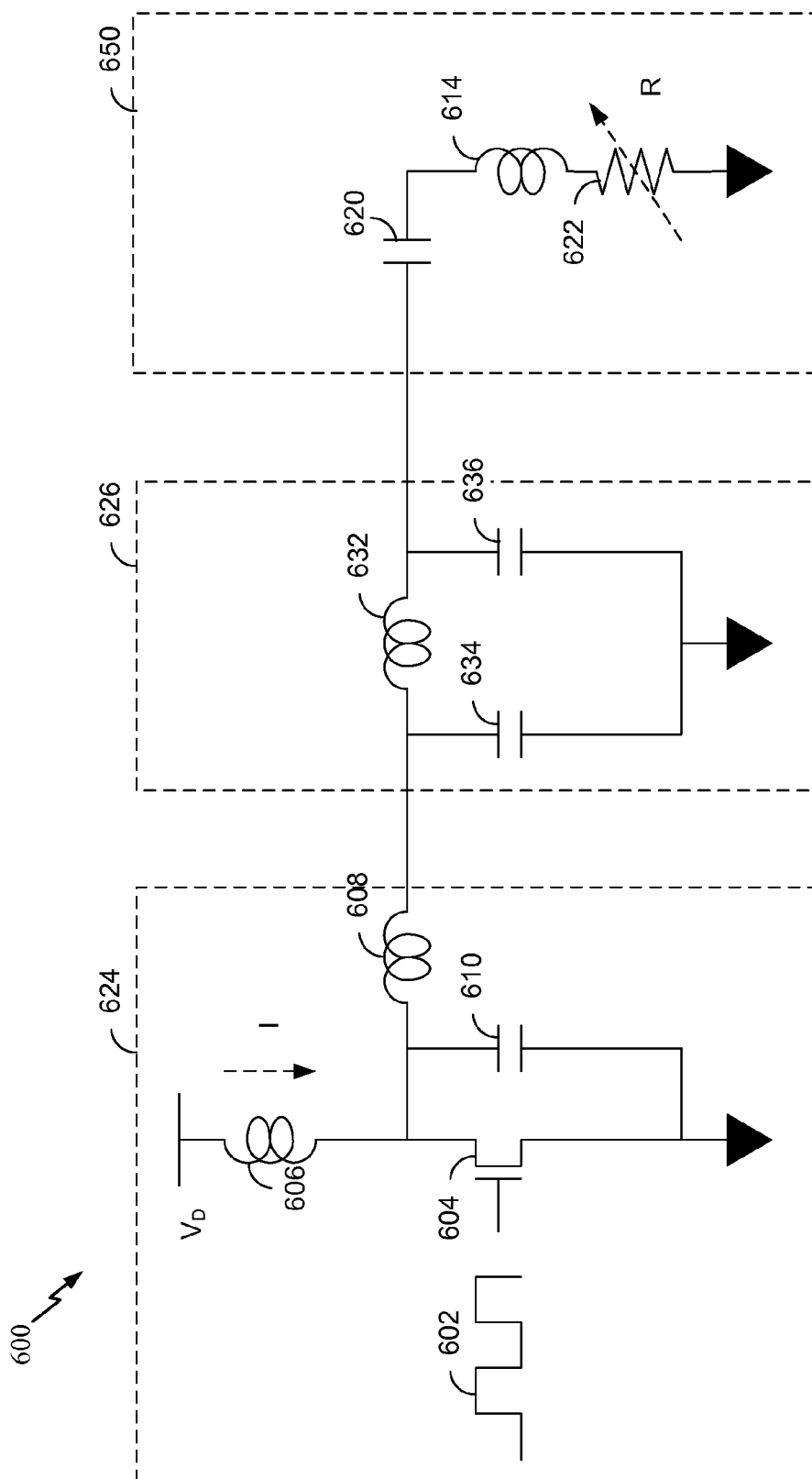


FIG. 6

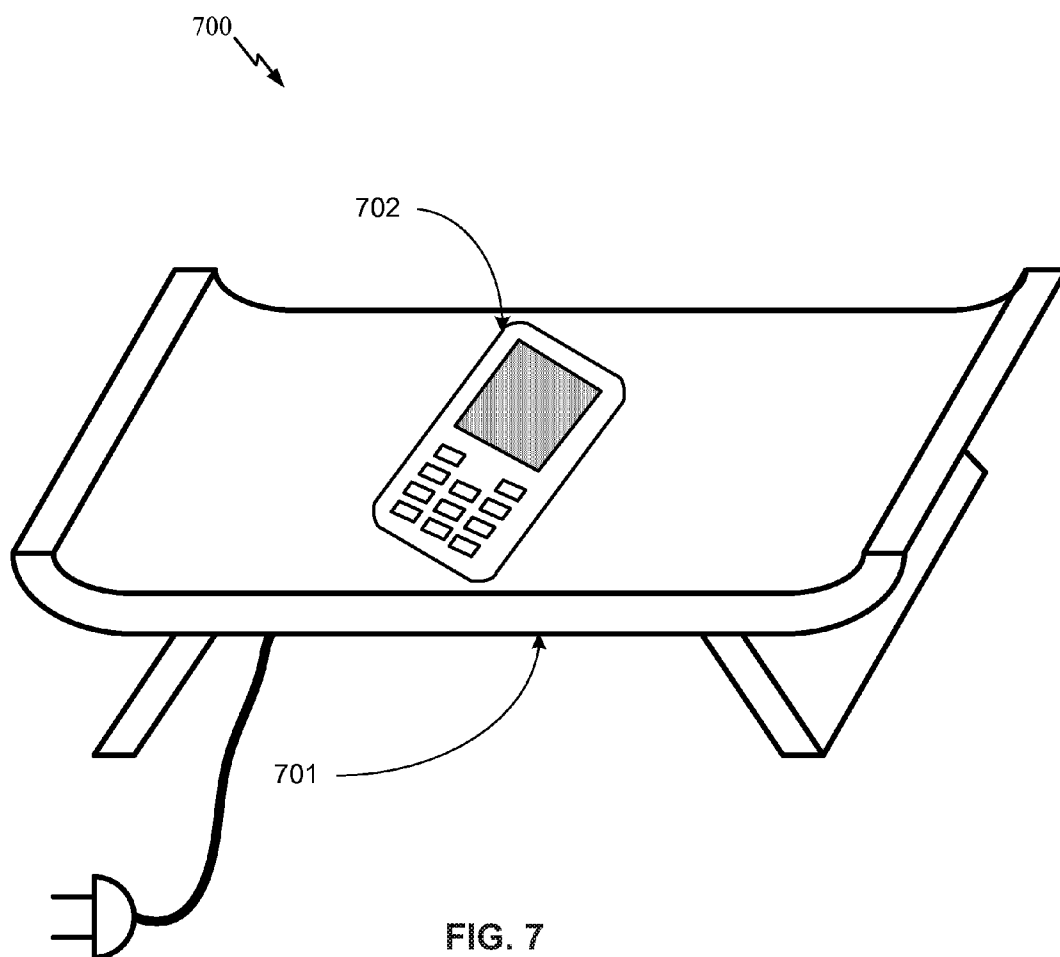


FIG. 7



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