Patent talk: Wireless charging using Wi-Fi routers

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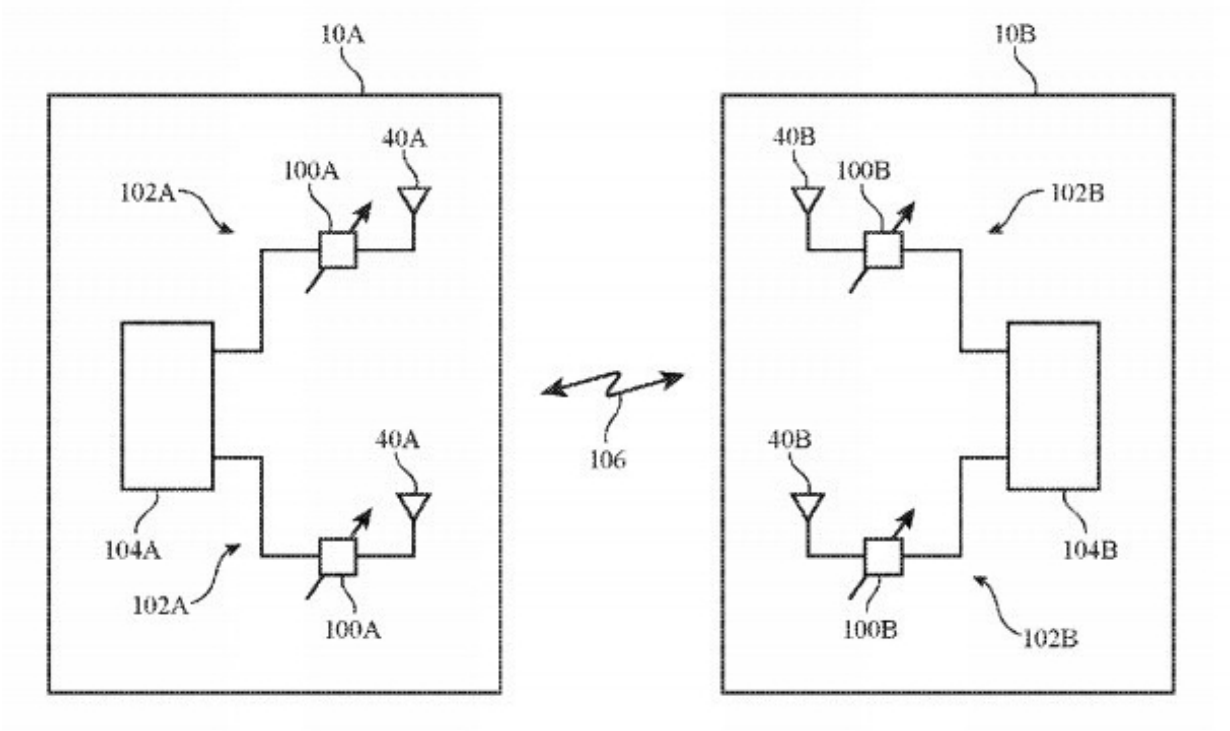

Credit: United States Patent Application 20170117754

(Tech Xplore)—We all like hearing about suggestions on how we could cut the time-outs and cords and forget about the docks to keep our phones running. What about having in hand a method where you can charge an iPhone wirelessly with an Wi-Fi router? Where electricity to your iOS device could be sent using a Wi-Fi router?

Well, Apple is looking in that direction, apparently, as it has shown interest in wireless charging via Wi-Fi routers and other equipment. "Theoretically, the proposal opens the door to wire-free charging from in-home Wi-Fi routers to cellular nodes and even satellite signals," said *AppleInsider*.

The news is in the form of spotting a patent application from Apple filed in October, 2015; the US Patent & Trademark Office application was made public on Thursday. The title is "Wireless Charging and Communications Systems With Dual-Frequency Patch Antennas."

Names of inventors on the application were Basim Noori, Khan Salam, Liang Han, Matthew A. Mow, Mattia Pascolini, Ruben Caballero, Thomas Biedka, Yi Jiang and Yuehui Ouyang.

TechRadar: "Originally filed almost two years ago, the patent describes using the technology in a way that could potentially make charging your phone or tablet as simple as getting in range of your home or workplace's Wi-Fi signal, rather than resting your device on top of a dock."

AppleInsider had spotted the application filing, and noted that the frequencies involved were normally dedicated to data communications. Apple's design calls for two devices, transmitter and receiver. Mikey Campbell said, "Each device contains one or more antennas coupled to wireless circuitry capable of making phase and magnitude adjustments to transmitted and received signals. Such hardware can be employed in dynamic beam steering operations."

The same frequencies used for getting online or connecting to a carrier's network, said Chris Smith in *BGR*, might also be used for wirelessly charging a battery or providing energy to a device.

Tyler Lee in *Ubergizmo* wrote about Apple's filing: "The patent also talks

about dual-polarization, dual-frequency patch antennas which in theory should be able to offer up a longer range while charging, meaning that one day you could walk around your house with your phone in hand while it charges wirelessly."

Patently Apple walked readers through the patch antennas discussion.

"Patch antennas may be used for wireless power transfer at microwave frequencies or other frequencies and may be used to support millimeter wave communications. The patch antennas may be used to form a beam steering array. The wireless circuitry may include adjustable circuitry to steer wireless signals associated with the antenna array. Furthermore, the patch antennas may include one or more dual-frequency dual-polarization patch antennas. Each patch antenna may have a patch antenna resonating element that lies in a plane and a ground that lies in a different parallel plane."

What were some reactions to the idea? Jeff Butts in *The Mac Observer* said Thursday, "The nice thing about doing this through your Wi-Fi router would be the matter of simplicity. Just about everybody has a Wi-FI router, so the transmission device would already be there. All you'd need would be the receiver pad, which could be embedded into your iPhone itself."

The *BGR* headline read, "Please let this iPhone wireless charging feature actually exist."

More information: Wireless Charging and Communications Systems With Dual-Frequency Patch Antennas, United States Patent Application 20170117754.