

United States Patent [19]

Fisher et al.

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[54] **POWER TRANSFER APPARATUS FOR CONCURRENTLY TRANSMITTING DATA AND POWER OVER DATA WIRES**

[75] Inventors: **David A. Fisher**, Menlo Park;
Lawrence M. Burns, Mountain View;
Stephen E. Muther, Palo Alto, all of Calif.

[73] Assignee: **3Com Corporation**, Santa Clara, Calif.

[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

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[51] Int. Cl.⁶ **H04B 1/00**; G08C 19/00

[52] U.S. Cl. **340/310.01**; 340/310.02;
340/310.08; 340/825.72; 375/257; 375/259;
455/3.1; 455/3.3

[58] Field of Search 340/310.01, 310.02,
340/310.08, 825.72; 370/490, 487, 419,
442; 375/257, 259; 307/126, 128, 127;
455/3.1, 3.3

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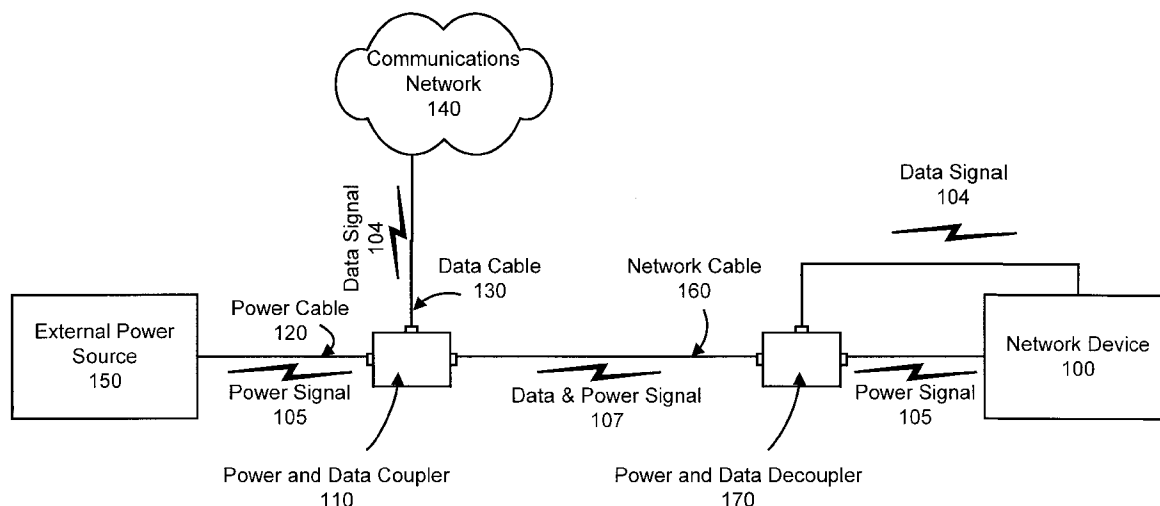
Primary Examiner—Donnie L. Crosland

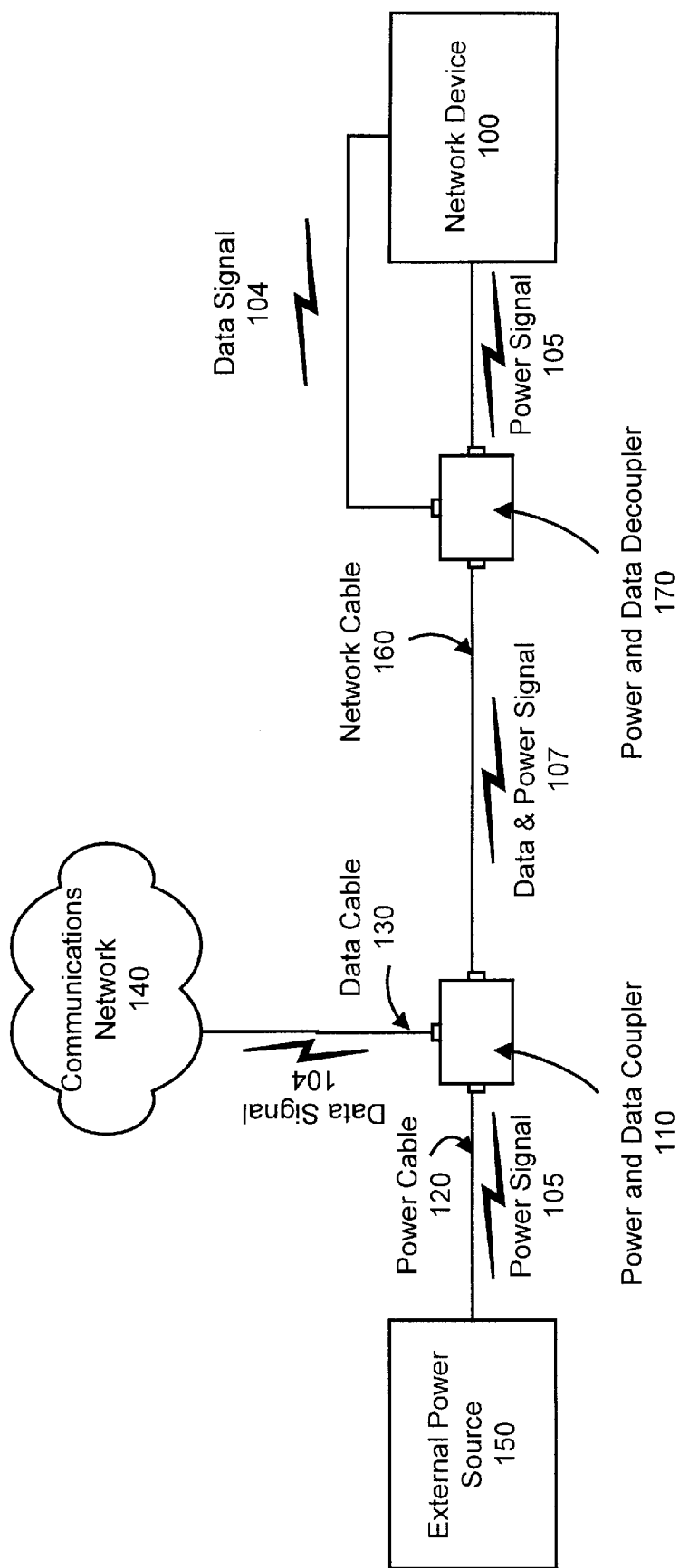
Attorney, Agent, or Firm—Kent R. Richardson; Wilson, Sonsini, Goodrich & Rosati

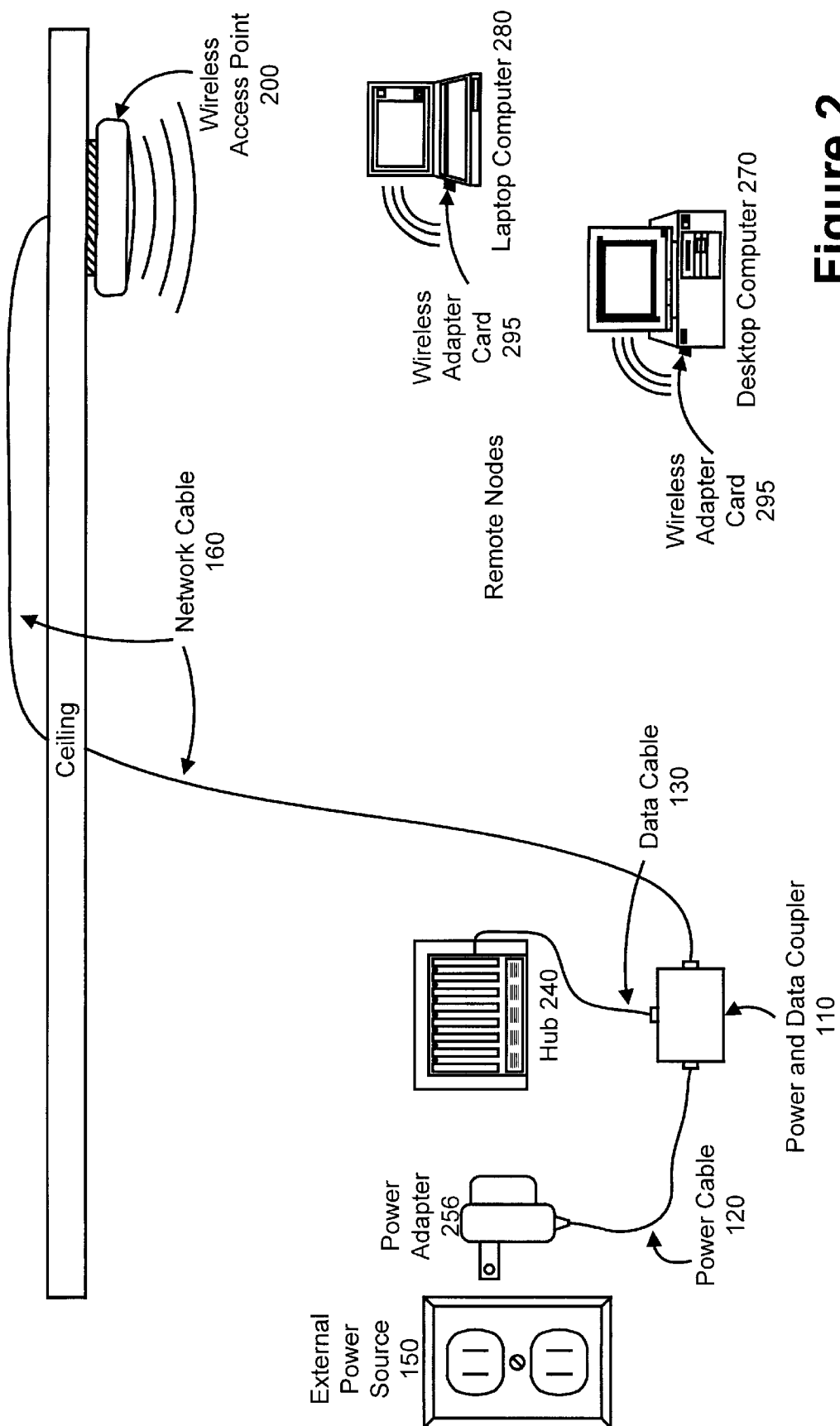
[57] ABSTRACT

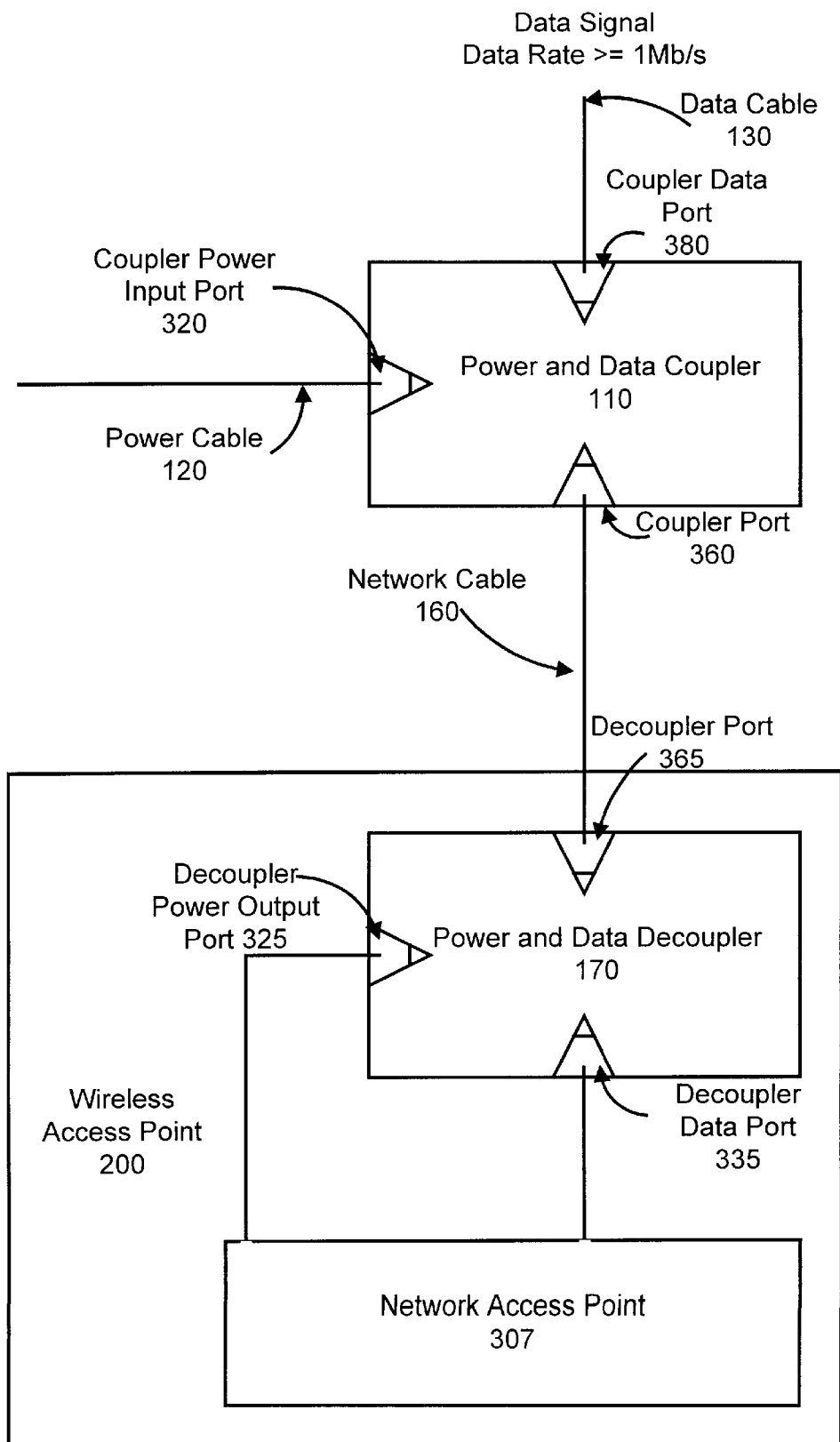
Electrical supply current, sufficient to power a wireless access point, is transmitted concurrently with a network data signal across a transmission line. A power and data coupler couples the network data signal and the power signal, received through a data input and a power input respectively, and transmits the coupled signal, to a distance of three meters or more, over the transmission line to a power and data decoupler. The power and data decoupler separates the power signal from the network data signal and supplies those signals to a power output port and a data output port, respectively, for use by a wireless access node. The power signal may be modulated at a low frequency relative to the frequency of the data signal, and the network data signal has a data transmission rate of one megabit/second or higher.

32 Claims, 5 Drawing Sheets



**Figure 1**

**Figure 2**

**Figure 3**



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