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United States Patent [19]

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Natarajan et al.

[45] Date of Patent: **Aug. 31, 1993**

- [54] BATTERY EFFICIENT OPERATION OF SCHEDULED ACCESS PROTOCOL
- [75] Inventors: **Kadathur S. Natarajan**, Millwood; **Chia-Chi Huang**, Yorktown Heights, both of N.Y.
- [73] Assignee: **International Business Machines Corporation**, Armonk, N.Y.
- [21] Appl. No.: **749,234**
- [22] Filed: **Aug. 23, 1991**
- [51] Int. Cl.⁵ **H04B 7/212; H04B 7/26**
- [52] U.S. Cl. **370/95.3; 370/85.2; 455/38.3; 455/54.1; 455/343**
- [58] Field of Search **370/95.1, 95.3, 104.1, 370/29, 85.2, 85.7, 94.1; 455/53.1, 54.1, 343, 38.3; 340/825.44, 311.1; 379/58**

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William Stallings, "Data and Computer Communications", Macmillan Publishing Company, 1985, pp. 312-315.

Primary Examiner—Douglas W. Olms
Assistant Examiner—Hassan Kizou
Attorney, Agent, or Firm—Jack M. Arnold

[57] ABSTRACT

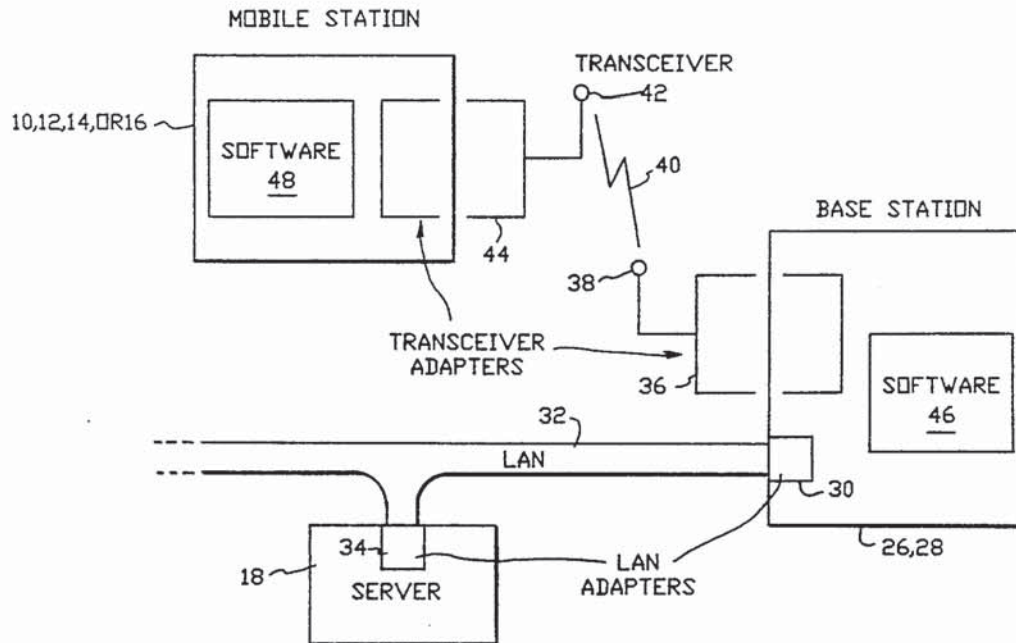
A method and apparatus for conserving battery power in a wireless link adapter of a battery operated computer such as a portable laptop computer, as controlled by a scheduled multiaccess protocol. The portable computer is operable as a mobile unit in a multi-cell wireless network. The scheduled access multiaccess protocol is implemented to effectively conserve battery power by suitable control of the state of the controller, the transmitter and receiver units at the wireless link adapter by scheduling when the adapter is in a normal running mode, or a standby mode in which power is conserved.

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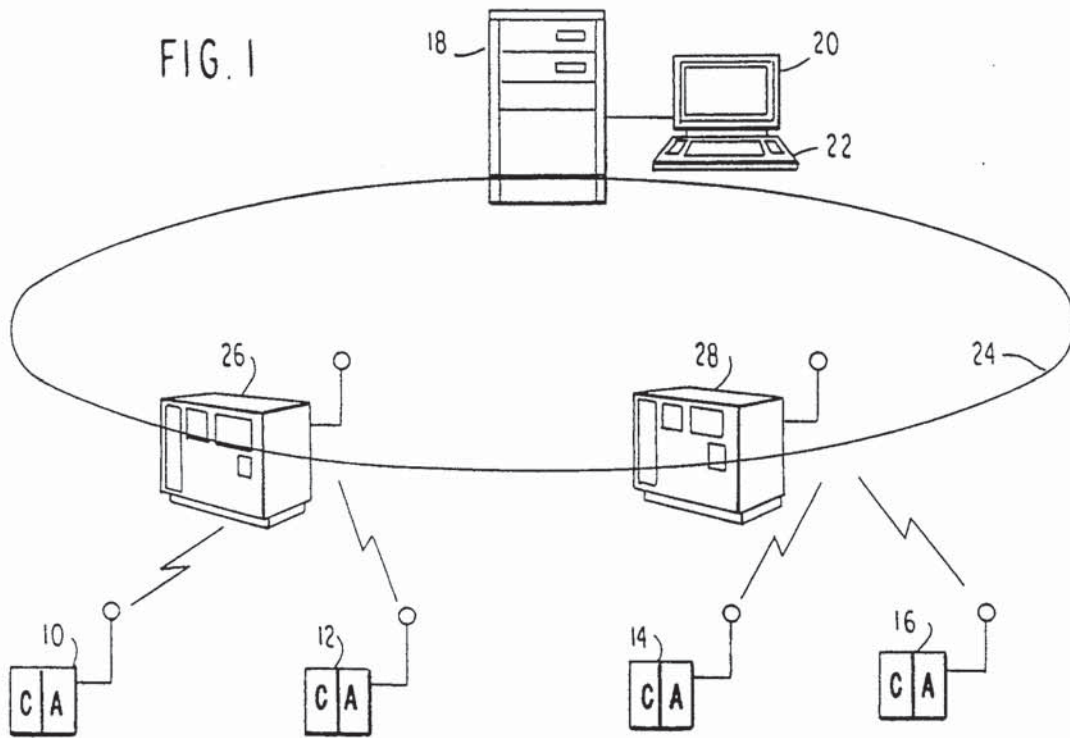
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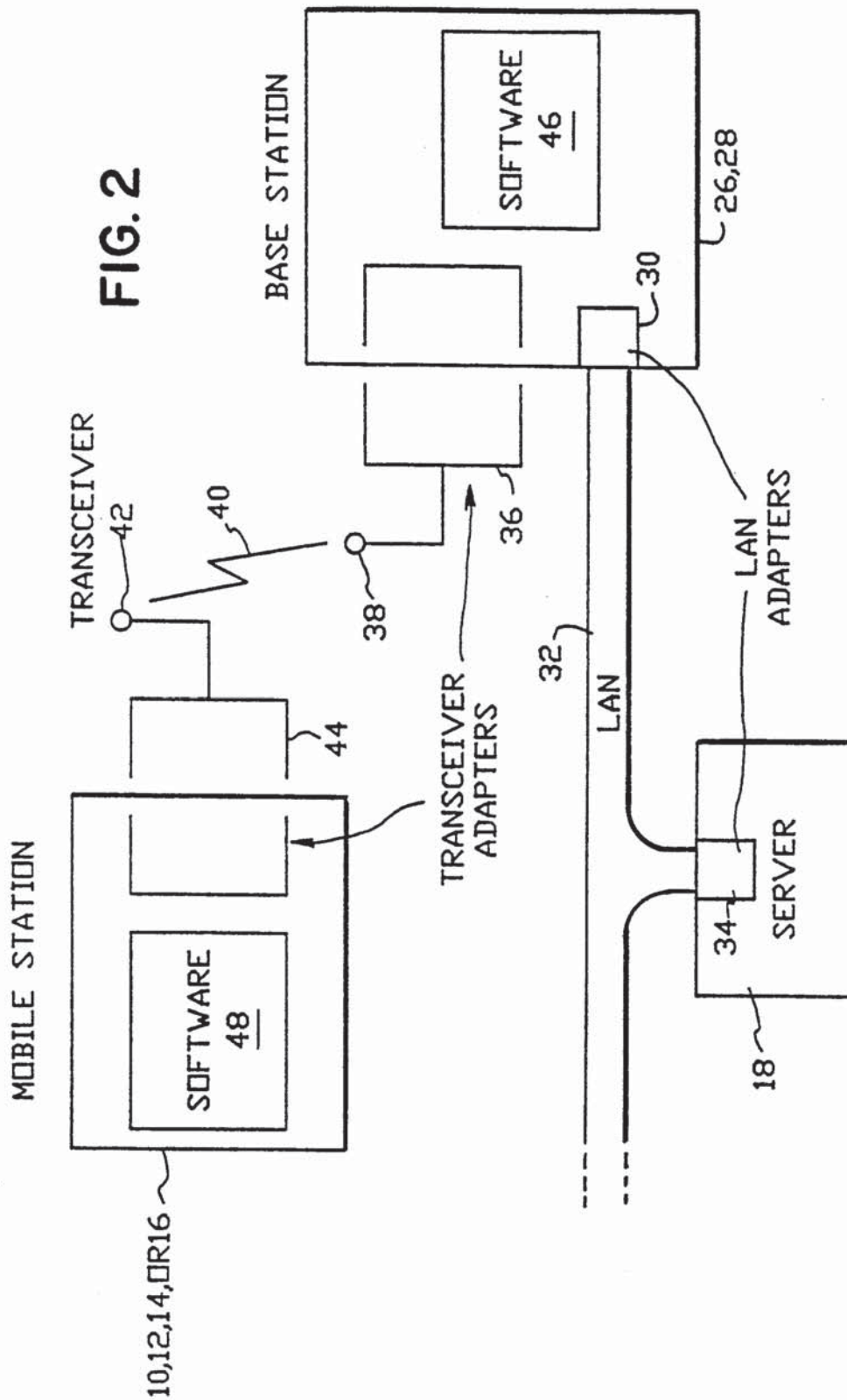
7 Claims, 9 Drawing Sheets



| G | AH | A | BH | B | CH | C | FT |
|---------|----------------|----------------|----------------|--------------|---------|---------|---------|
| ... | ... | | ... | | ... | | ... |
| ... | ... | <-----> | <-----> | <-----> | <-----> | <-----> | <-----> |
| | | Base to | Mobile to | Contention | | | |
| | | Mobiles | Base | from Mobiles | | | |
| -> FH | <-----TA-----> | <-----TB-----> | <-----TC-----> | | | | |

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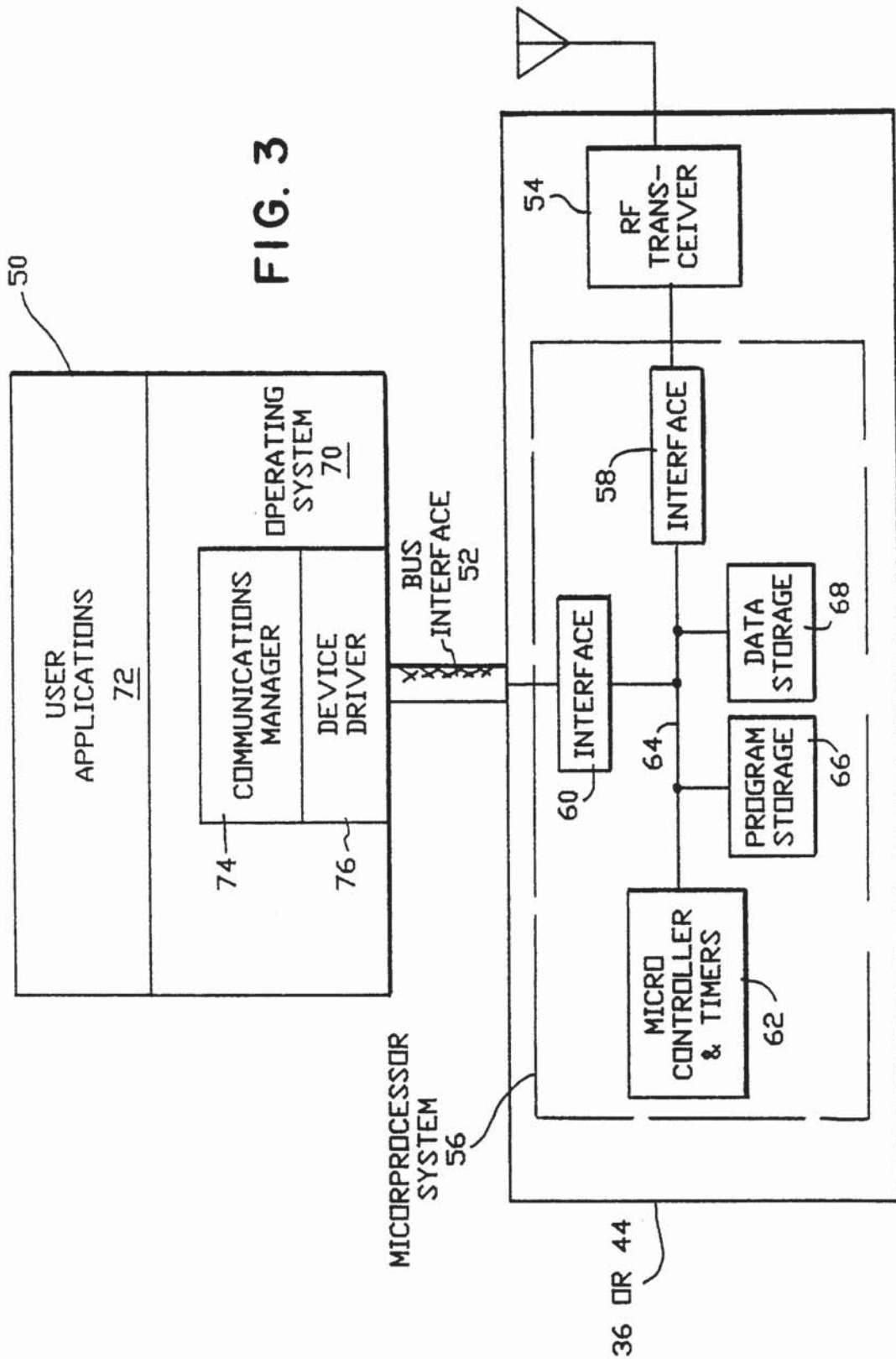


FIG. 4

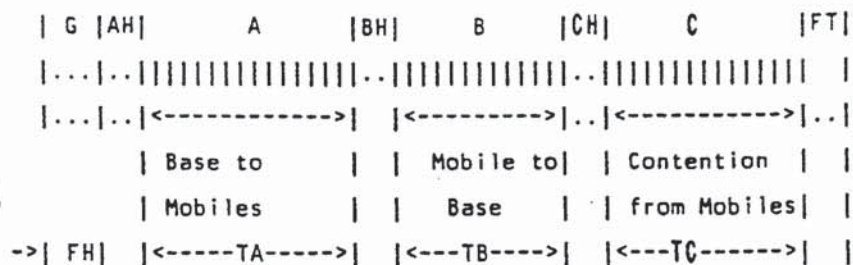


FIG. 5

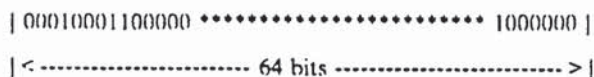


FIG. 6

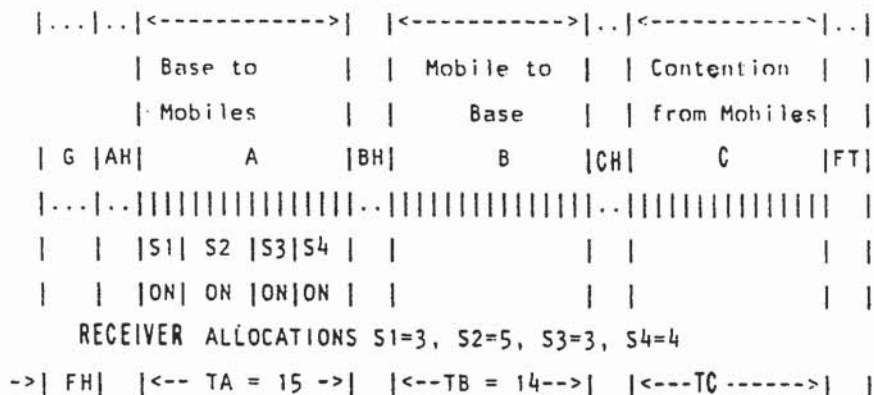
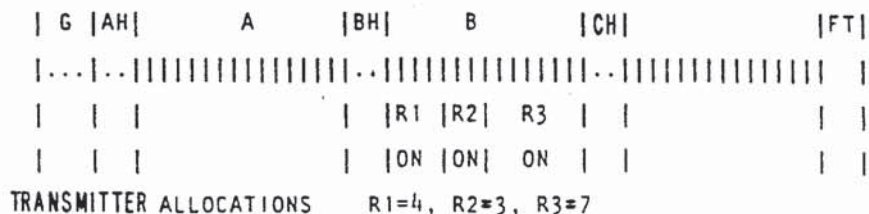


FIG. 7



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