

# EXHIBIT A

US007589642B1

(12) **United States Patent**  
**Mui**(10) **Patent No.:** **US 7,589,642 B1**  
(45) **Date of Patent:** **Sep. 15, 2009**(54) **RELAYING KEY CODE SIGNALS THROUGH  
A REMOTE CONTROL DEVICE**(75) Inventor: **Daniel SauFu Mui**, San Jose, CA (US)(73) Assignee: **UEI Cayman Inc.** (KY)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 1076 days.

(21) Appl. No.: **10/737,029**(22) Filed: **Dec. 16, 2003**(51) **Int. Cl.**  
**G08C 19/00** (2006.01)(52) **U.S. Cl.** ..... **340/825.69; 340/825.72;**  
340/825.22; 340/5.61; 340/5.64; 340/5.74;  
340/825.29; 345/168(58) **Field of Classification Search** ..... 340/825.69,  
340/825.72, 825.22, 5.61, 5.64, 5.74; 345/172,  
345/168; 348/734

See application file for complete search history.

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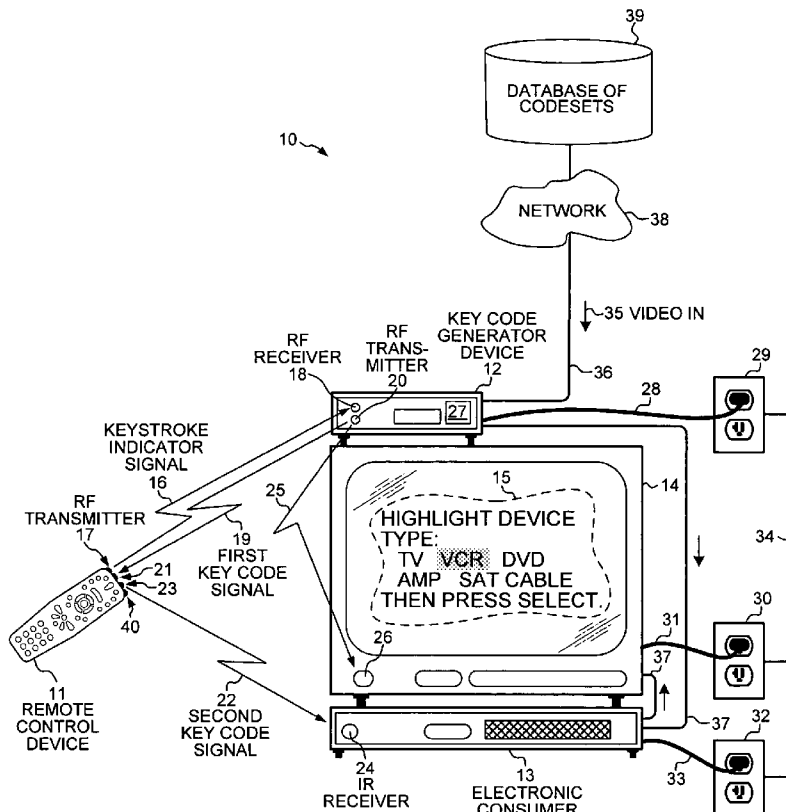
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(74) *Attorney, Agent, or Firm*—Imperium Patents Works;  
Darien K. Wallace(57) **ABSTRACT**

Upon receiving a keystroke indicator signal from a remote control device, a key code generator device identifies a codeset usable to communicate with a selected consumer device. The keystroke indicator signal contains an indication of a pressed key, which corresponds to a function of the selected consumer device. Using the identified codeset and the key indication, the key code generator device generates a key code and modulates that key code onto a radio frequency carrier signal, thereby generating a first key code signal. The remote control device receives the first key code signal from the key code generator device and modulates the key code onto an infrared frequency carrier signal, thereby generating a second key code signal. The remote control device relays the key code to the selected consumer device in the second key code signal. The key code causes the selected consumer device to perform the desired function.

**25 Claims, 4 Drawing Sheets**

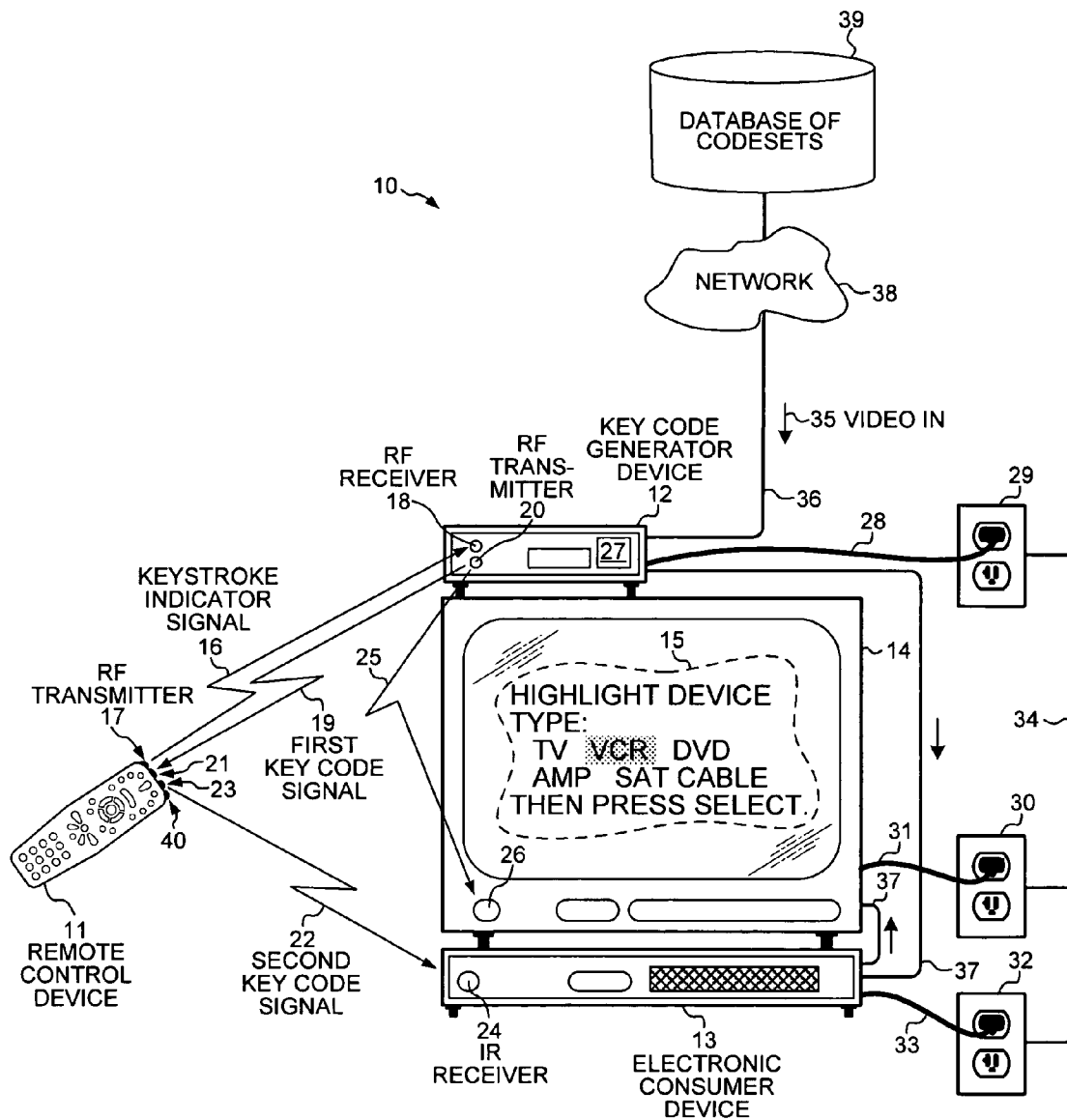


FIG. 1

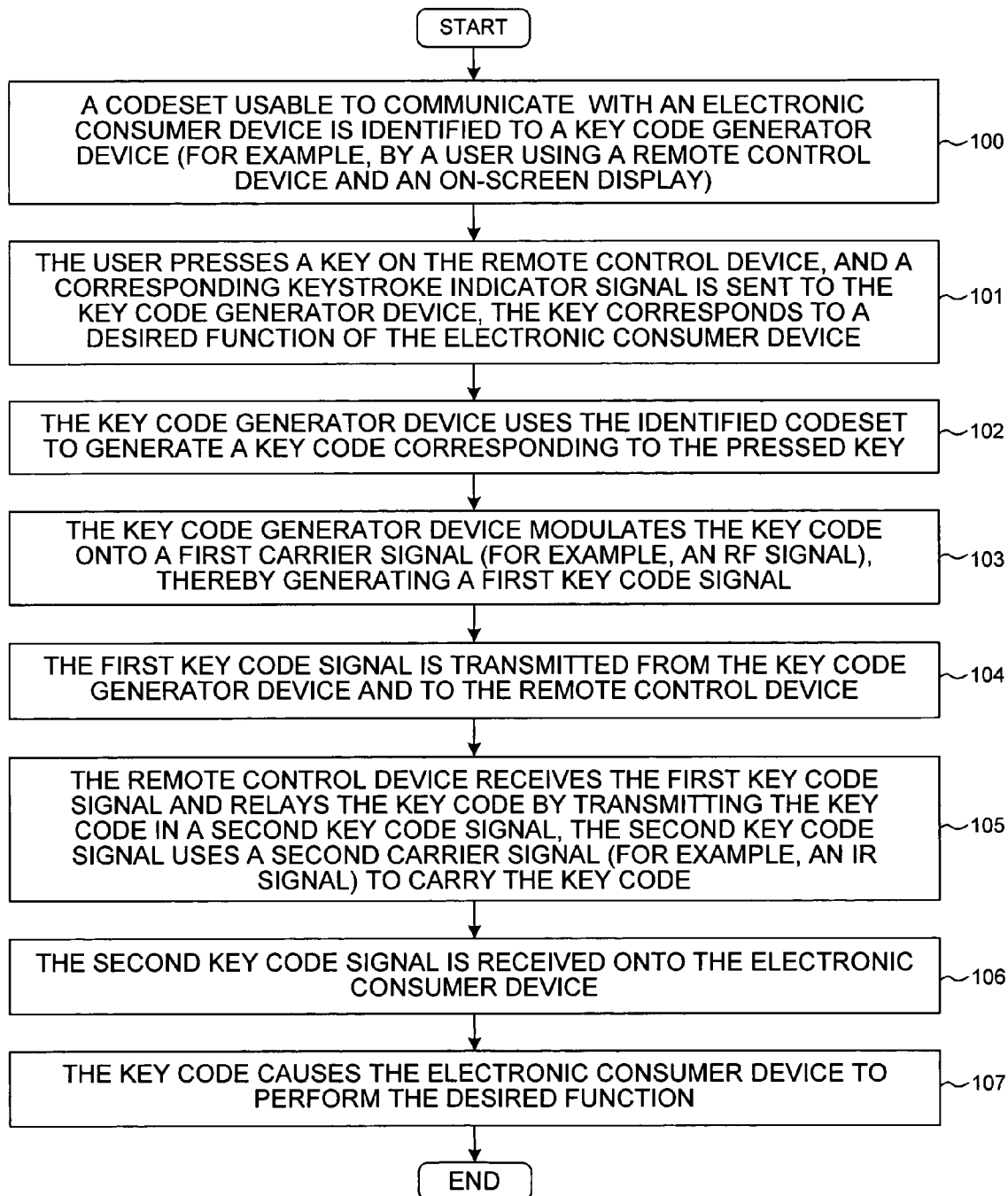


FIG. 2

U.S. Patent

Sep. 15, 2009

Sheet 3 of 4

US 7,589,642 B1

0 1 0 1 0 0 0 1 1 1 0 0  
 SYSTEM CODE KEY DATA

KEY CODE  
 FIG. 3

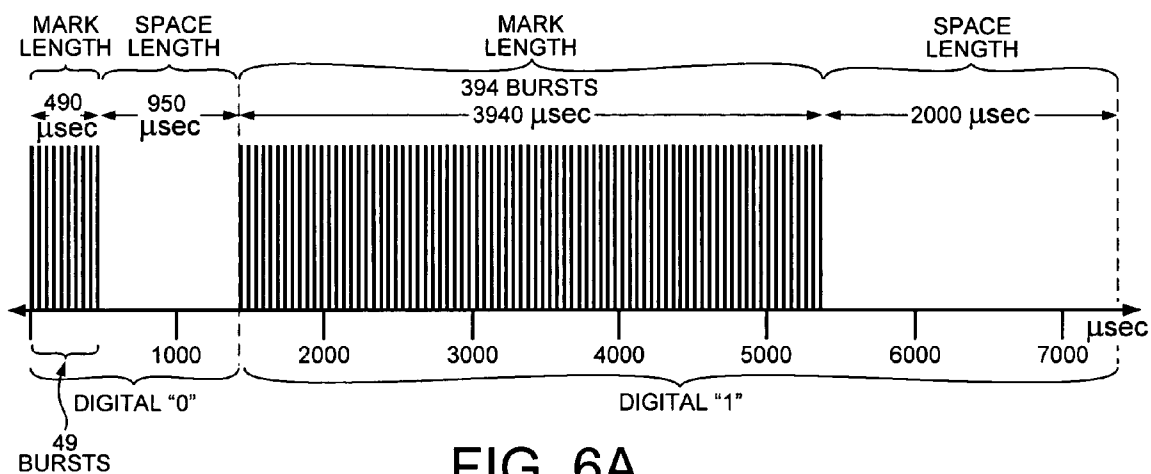


FIG. 6A

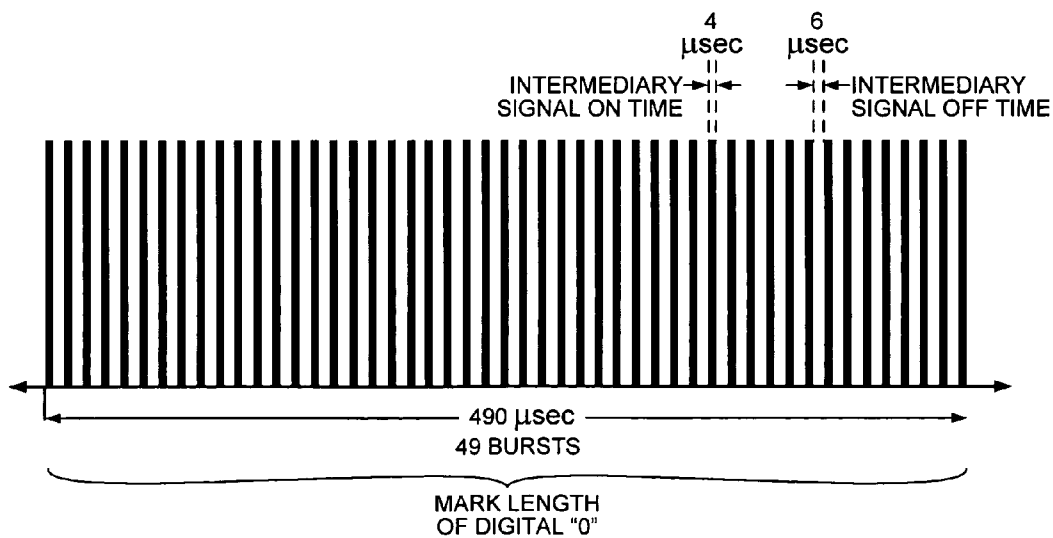


FIG. 6B

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