United States Patent [19]

Darbee et al.

[54] **UNIVERSAL REMOTE CONTROL DEVICE**

[75] Inventors: **Paul V. Darbee**, Santa Ana; **Richard E. Ellis**, Garden Grove; **Louis S. Jansky**, Long Beach; **Avram S. Grossman**, Santa Ana, all of Calif.

[73] Assignee: Universal Electronics, Inc., Tustin, Calif.

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 109,336, Oct. 14, 1987, abandoned.

[51] Int. Cl.^{5} **H04B 9/00; G08C 19/00; H04Q 1/00**

[52] U.S. Cl. **364/900**; 340/825.69; 340/825.57; 340/825.72; 455/151; 455/603; 455/352

[58] Field of Search 364/900; 455/355, 151, 455/603; 340/825.69

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Primary Examiner—Andrew J. James
Assistant Examiner—Viet Q. Nguyen
Attorney, Agent, or Firm—Thomas R. Vigil

[57] **ABSTRACT**

The universal remote control system comprises data processor, input device including a keyboard and a keyboard circuit connected to the data processor, signal output device including circuitry for generating infra-red light codes connected to the data processor means, a memory including a battery backed, non-volatile RAM only and no ROM for storing (a) a set of instructions and (b) a library of code data for enabling the infrared light generating circuitry to generate specific infrared codes, the RAM being coupled to the data processor, and a data coupling device including terminals coupled to the CPU for enabling new code data to be supplied from outside the system to, or retrieved from, the RAM through the terminals and the CPU.

The RAM in the ROM-less data processing means is loaded by carrying out the following steps: (a) disabling the central processing unit; (b) connecting a separate microprocessor system to said RAM; (c) transferring instructions and/or data to said RAM; and (d) re-enabling the central processing unit to enable the central processing unit to execute the instructions so transferred.

38 Claims, 17 Drawing Sheets

FIG. 1

FIG. 2

LED 1
LED 2
LED 4
LED 3

42
38
40

45

36
43
36

31

34

26

25

32
25

30

14

12

32

24

18
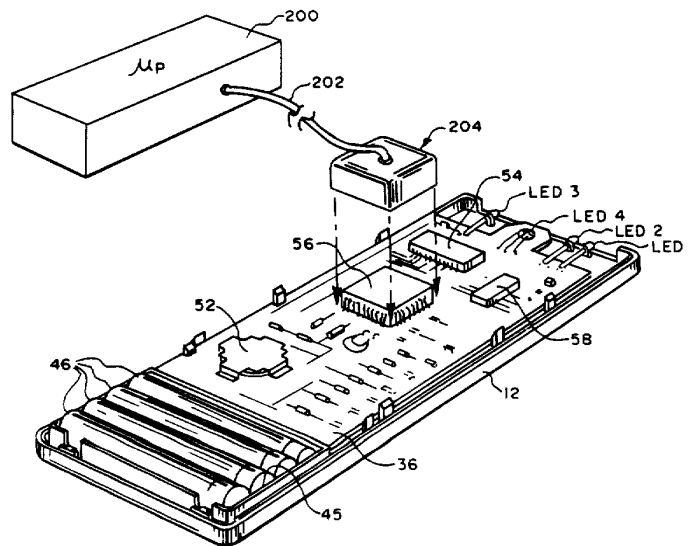
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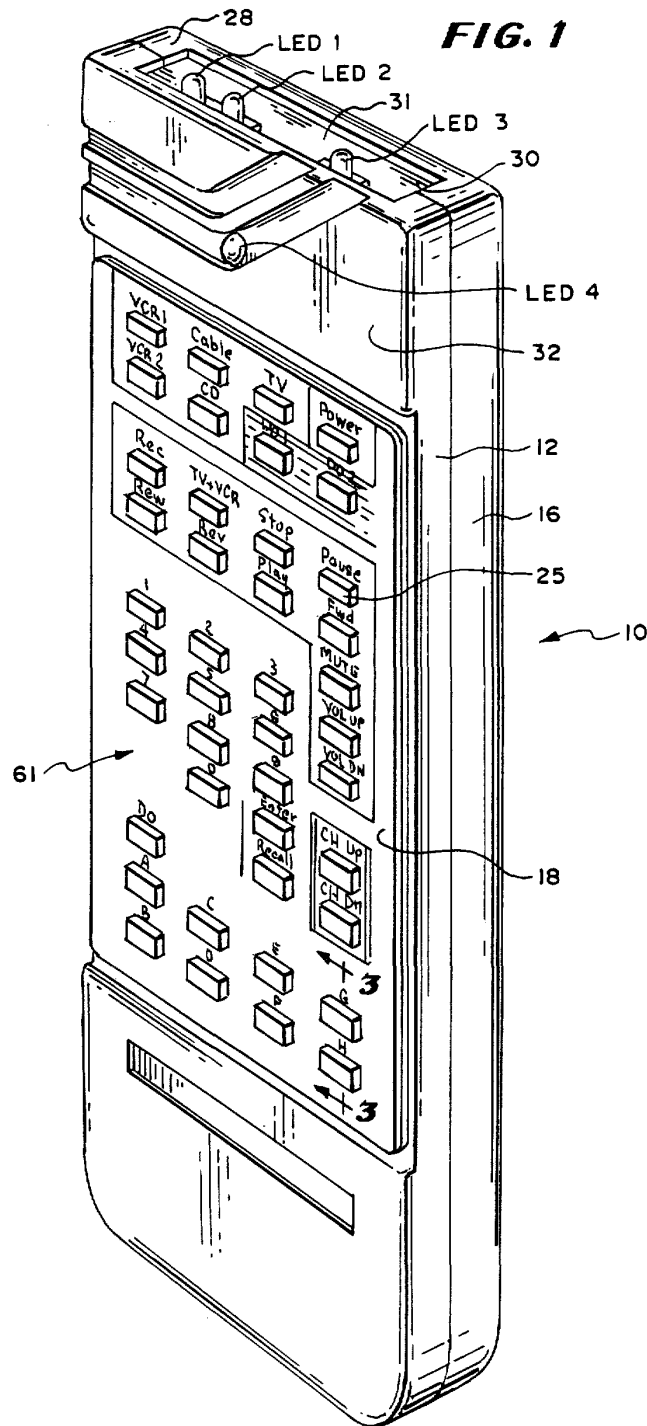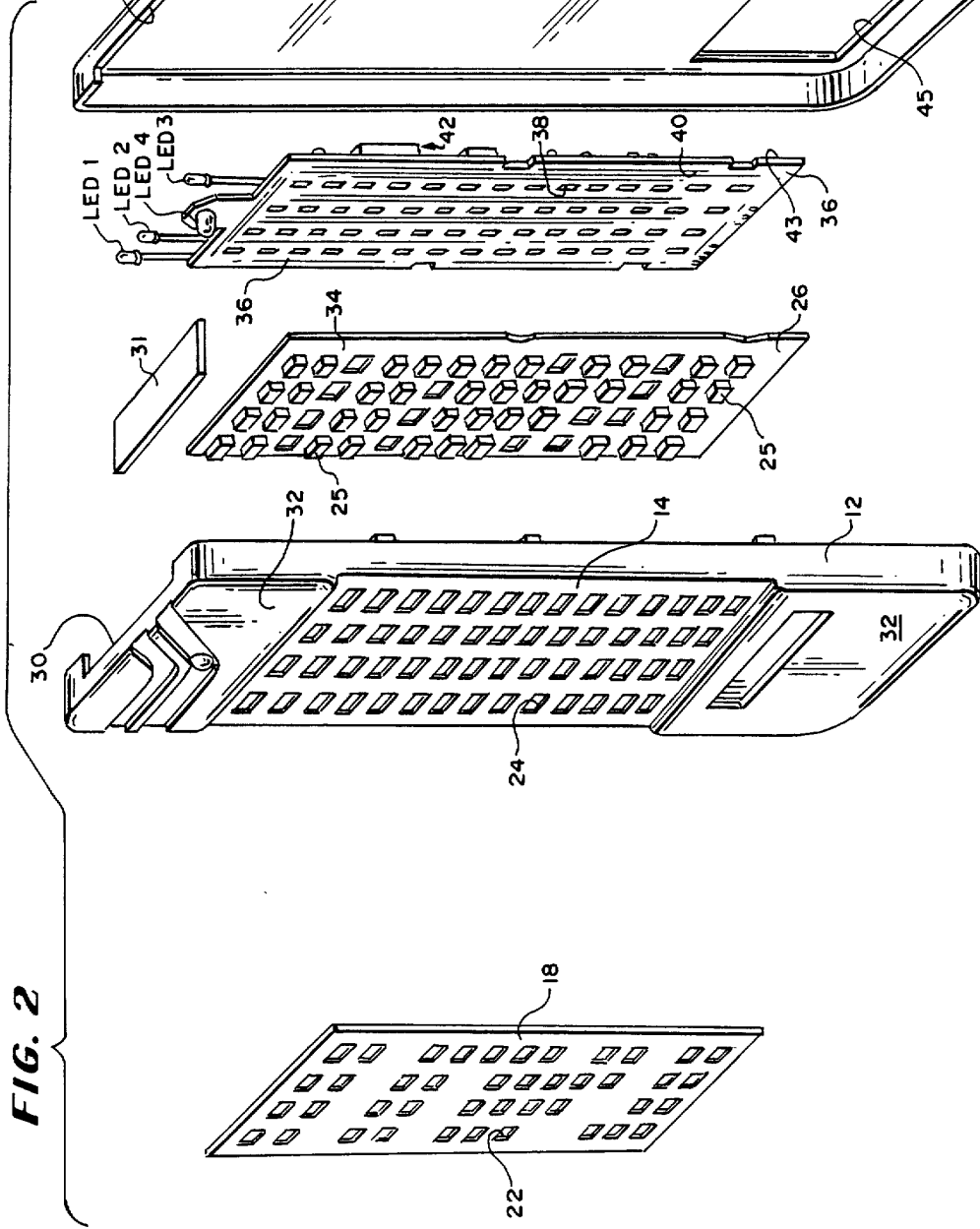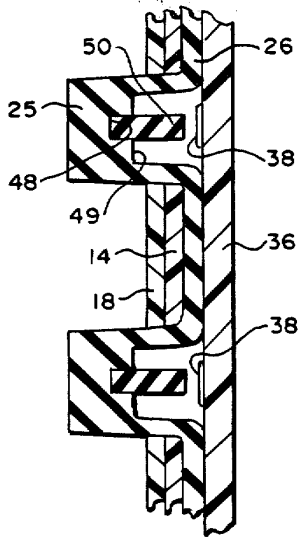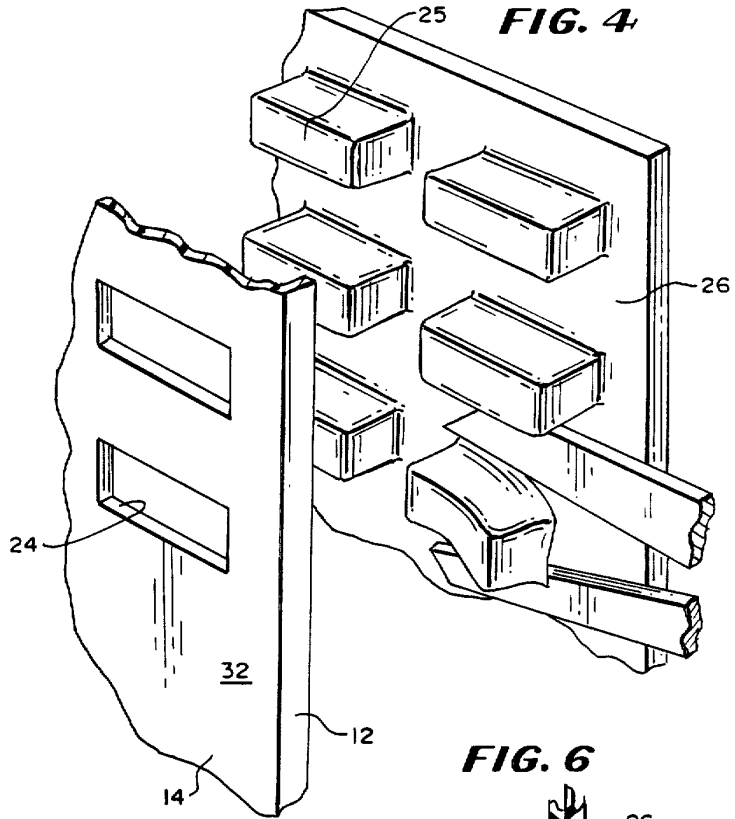
FIG. 3

FIG. 4

FIG. 5

FIG. 6

FIG. 7

LED 3   31   LED 2   30

LED 1

LED 4

12

RAM 54

LATCH 58

CPU 56

43

36

LI BATTERY 52
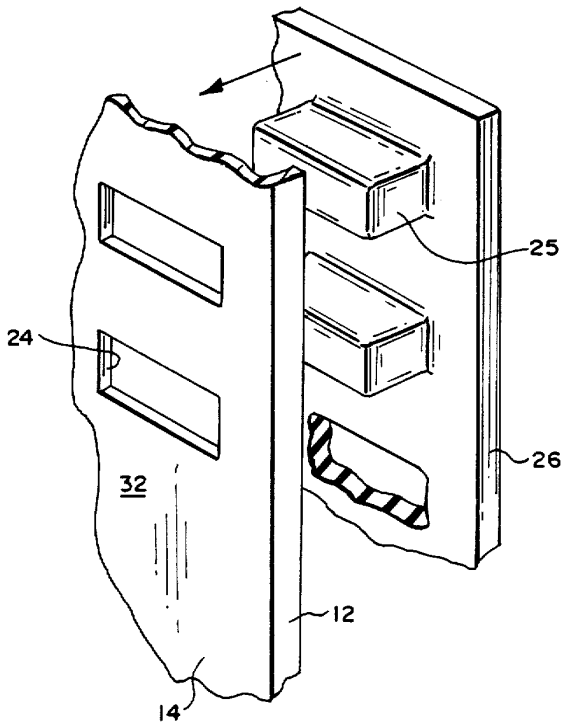
SERIAL PORTS 1, 2, 3

BATTERY COMPARTMENT 45

DOCKET ALARM
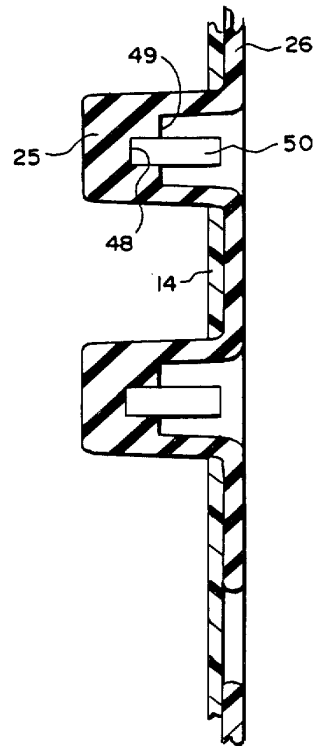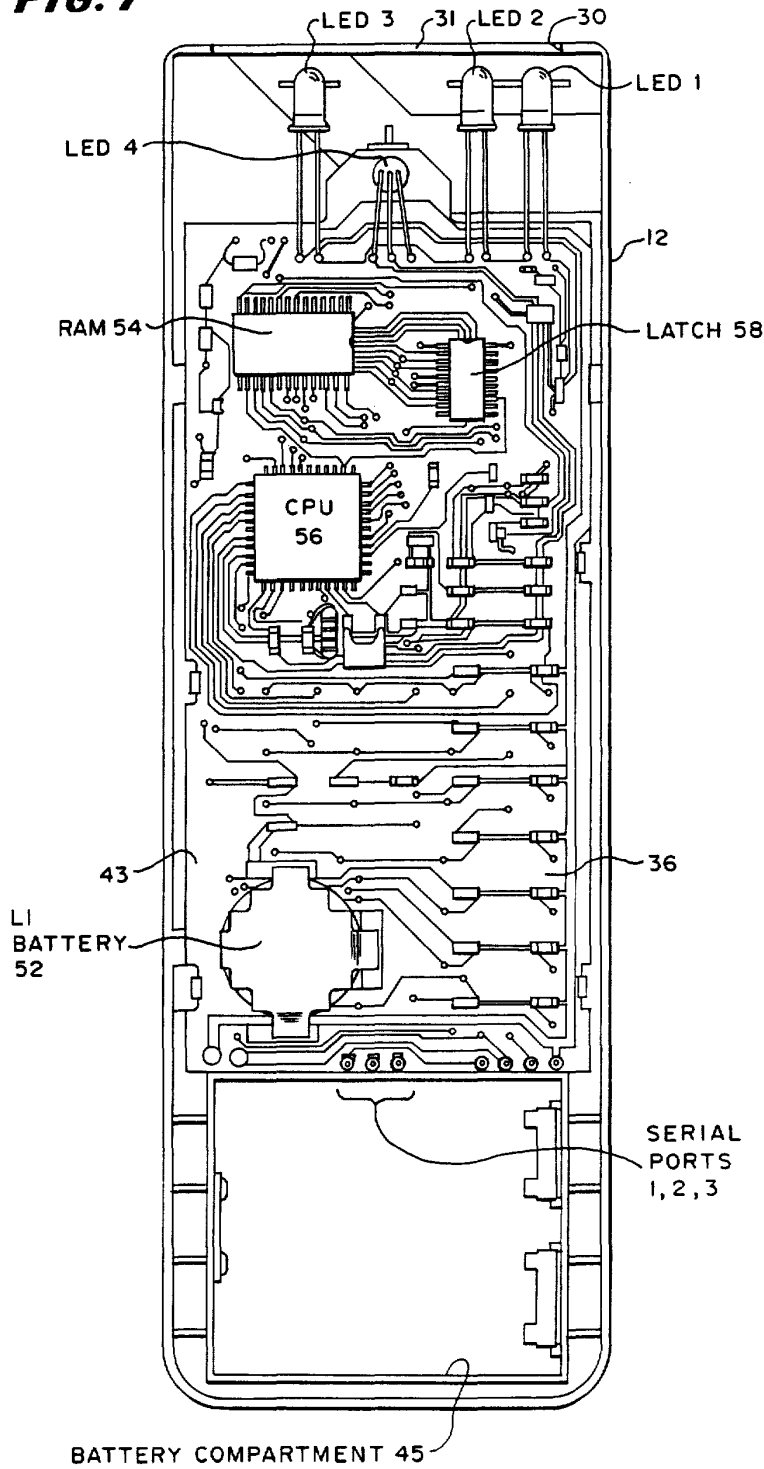
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