[54] **REMOTELY UPGRADABLE UNIVERSAL REMOTE CONTROL**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 127,999, Dec. 2, 1987, Pat. No. 4,959,810.

[51] Int. Cl.^{5} **H04M 11/00**
[52] U.S. Cl. **379/102; 379/444; 358/194.1; 358/142**
[58] Field of Search 379/104, 105, 102, 443, 379/444; 358/194.1, 142, 146, 147

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Assistant Examiner—Wing F. Chan
Attorney, Agent, or Firm—Thomas R. Vigil

[57] **ABSTRACT**

The universal remote control system includes a universal remote control comprising an input including a set of keys or push buttons for inputting commands into the remote control, infrared signal output circuitry for supplying an infrared signal to a controlled device including IR lamp driver circuitry, a central processing unit (CPU) coupled to the input and to the signal output circuitry, a single, non-volatile read-write memory coupled to the CPU and data coupling circuitry including terminal structure comprising a receiving port coupled to the CPU for enabling code data for creating appropriate IR lamp driver instructions for causing the infrared signal output circuitry to emit infrared signals which will cause specific functions to occur in a specific controlled device, for operating a variety of devices to be controlled, to be supplied from outside the remote control through the receiving port of the terminal structure directly to the CPU for direct entry to the memory to enable the remote control to control various devices to be controlled upon the inputting of commands to the keys of the input. The universal remote control system further includes a data transmission system including coupling circuitry for coupling the terminal structure to a computer directly, through a modem to a telephone line, or through a television set to a television signal picked up by the television set, the coupling circuitry including a cable, a first connector for connection to the terminal structure at one end of the cable, and an interface connector at the other end of the cable for connecting directly to a computer, or through a modem and a telephone line to a computer, or to a television set which receives data in a television signal from a computer.
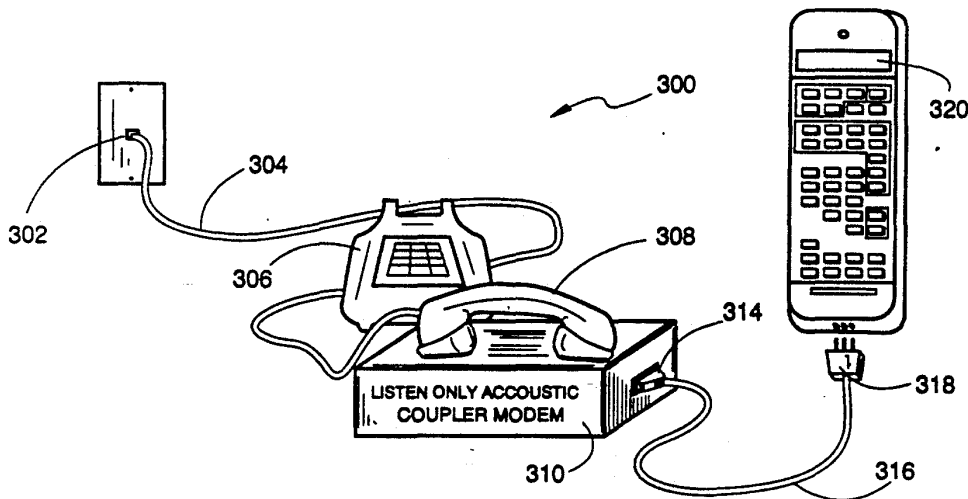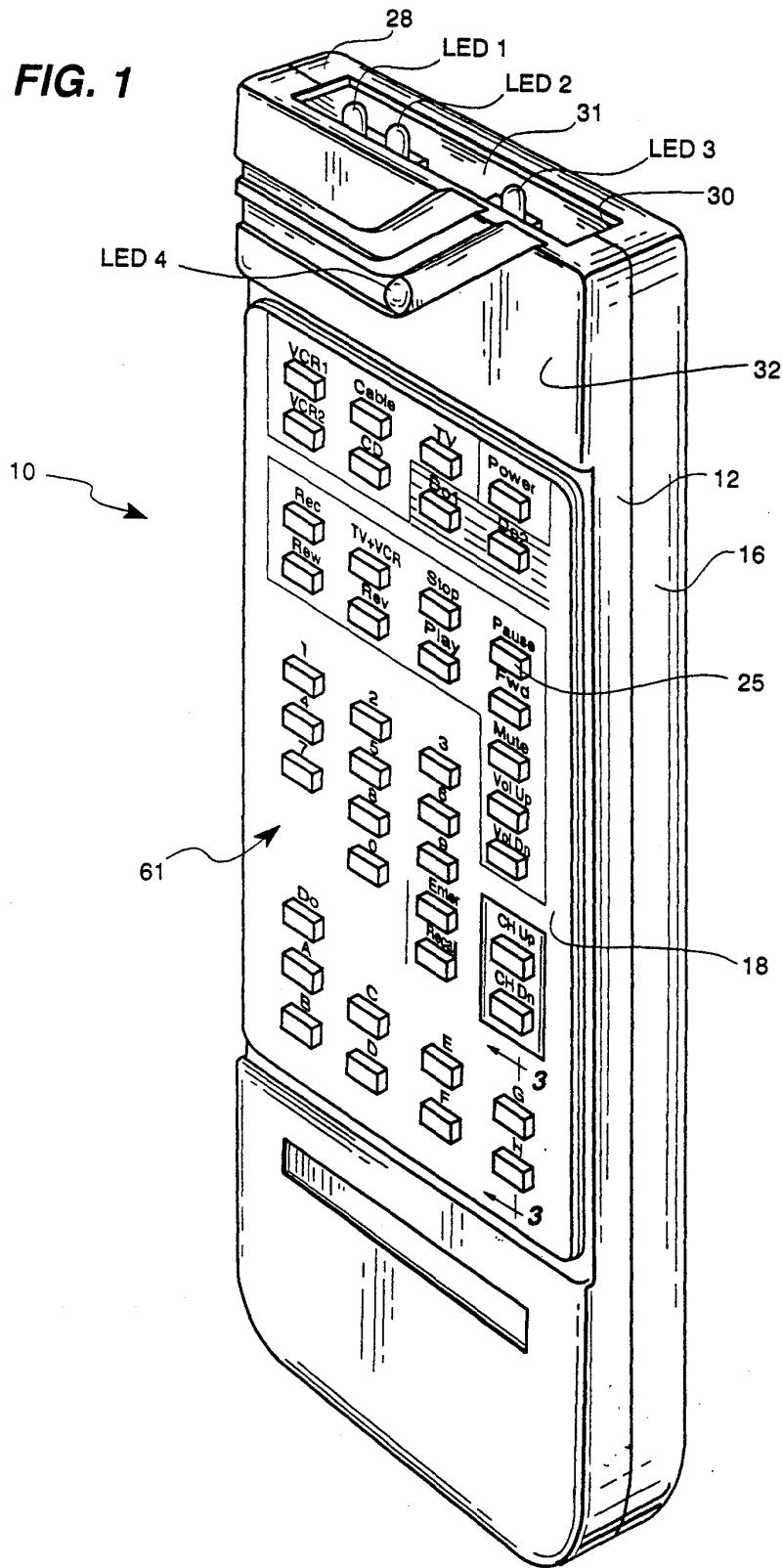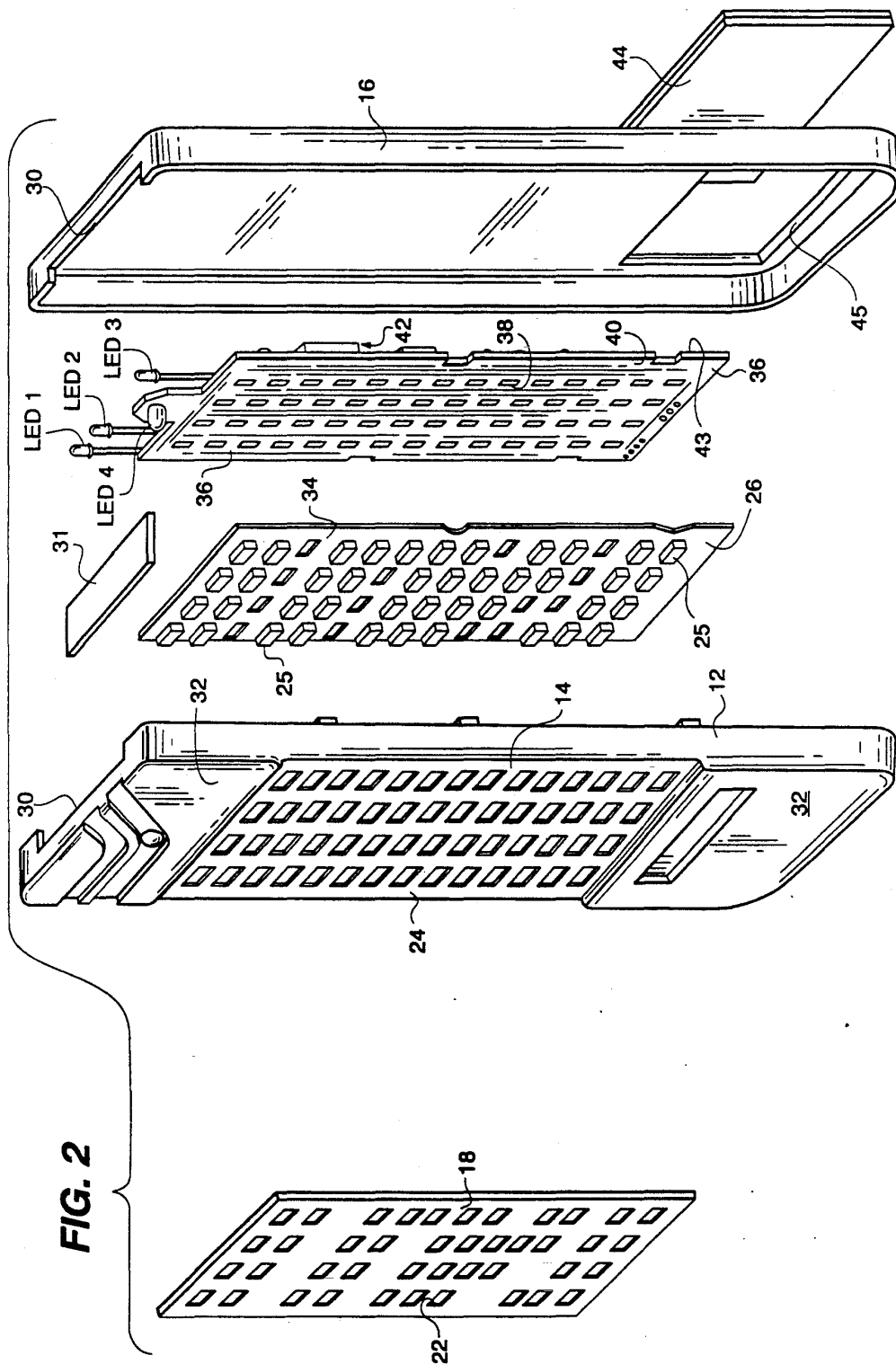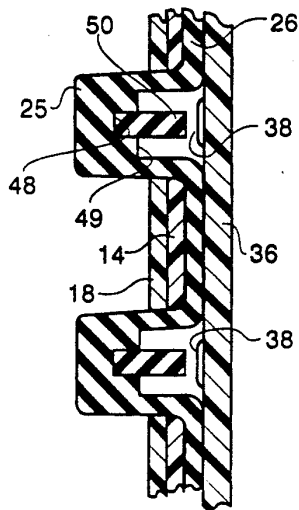
21 Claims, 18 Drawing Sheets

FIG. 1

28

LED 1

LED 2

31

LED 3

30

LED 4

32

10

12

16

VCR1

VCR2 Cable

CD TV

Power

Rec

Rew TV+VCR

Rev Stop

Play Pause

Fwd

25

Mute

Vol Up

Vol Dn

61

Do

A

B C

D E

F G

CH Up

CH Dn

18

3

3

Enter

Recal

FIG. 2

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

36

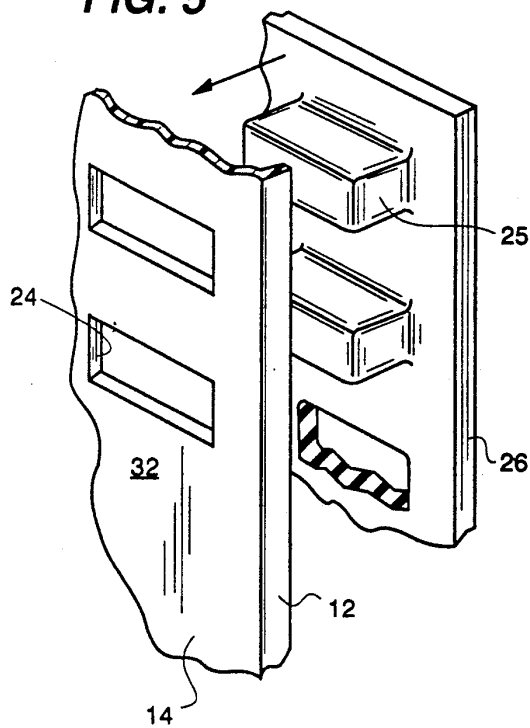L1 BATTERY 52

SERIAL PORTS 1,2,3

BATTERY COMPARTMENT 45
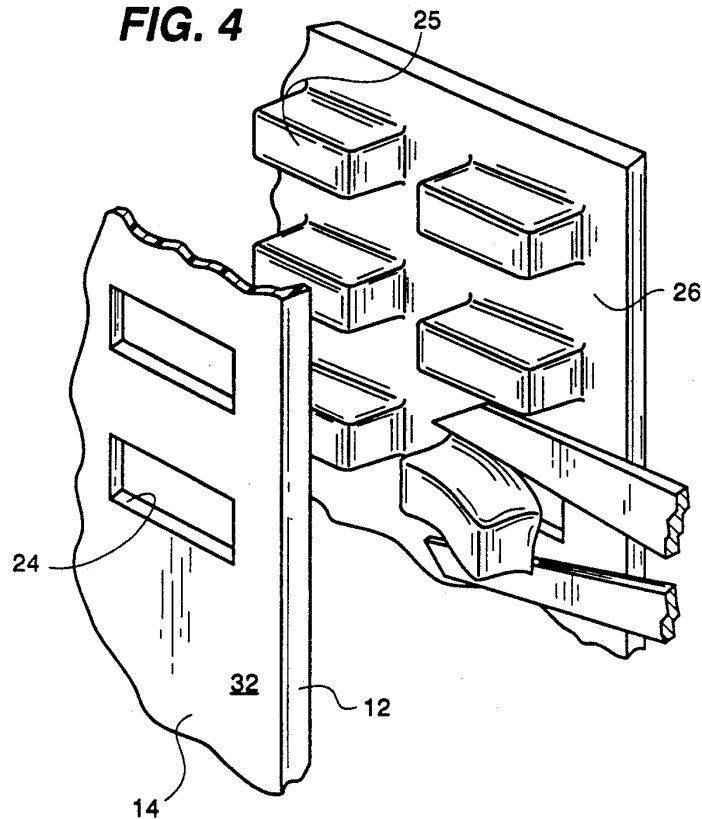
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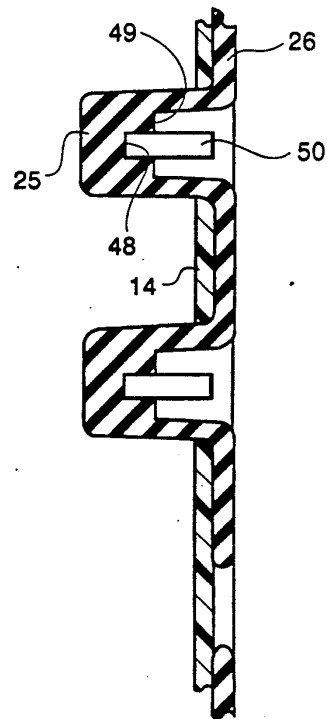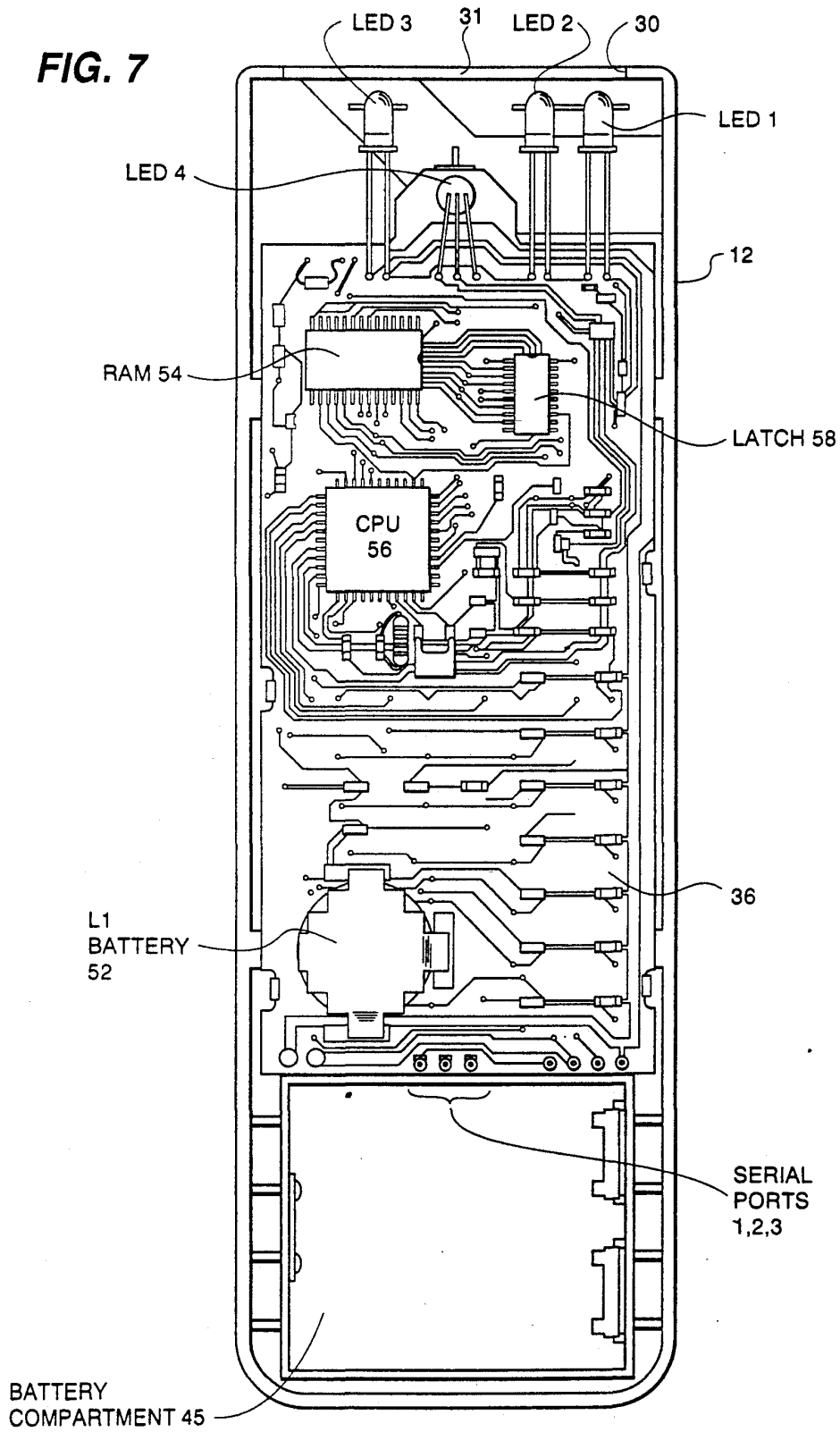
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