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5614906

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VERIFIED at NONE

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METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET  
U.S. DEPT. OF COMM./PAT. & TM—PTO-436L (Rev.12-94)

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5,614,906

**METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET**

**Transaction History**

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PATENT APPLICATION



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CONTENTS

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	1. Application <u>left</u> papers.	
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INDEX OF CLAIMS

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SYMBOLS  
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 - (Through numbers) Canceled  
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 N Non-elected  
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 A Appeal  
 O Objected

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Class	Sub.	Date	Exmr.
341	176	9/20/96	G.H.
341	173		
	174		
	175		
	23		
348	734		
359	148		
364	709.14		
	709.15		
	709.16		
379	102		
340	825.37		
	825.69		
	825.72		

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	Date	Exmr.
APS Search (attached)	9/30/96	G.H.

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Class	Sub.	Date	Exmr.
341	176	9/30/96	G.H.
359	148		
379	102		
340	825.37		
	825.69		
	825.72		

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**United States Patent** [19]  
**Hayes et al.**

[11] **Patent Number:** **5,614,906**  
[45] **Date of Patent:** **Mar. 25, 1997**

[54] **METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET**  
[75] **Inventors:** Patrick H. Hayes, Mission Viejo; Kimthoa T. Nguyen, Yorba Linda, both of Calif.

4,959,810 9/1990 Darbee et al. .... 340/825.69  
4,999,622 3/1991 Amano et al. .... 341/176  
5,420,573 5/1995 Tanaka et al. .... 341/176  
5,453,738 9/1995 Zirkl et al. .... 340/825.72  
5,485,149 1/1996 Takiguchi et al. .... 359/148  
5,537,463 7/1996 Escobosa et al. .... 379/102

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*Attorney, Agent, or Firm*—Thomas R. Vigil; Gary Jarosik; Mark R. Galis

[21] **Appl. No.:** 636,666

[57] **ABSTRACT**

[22] **Filed:** Apr. 23, 1996

[51] **Int. Cl.<sup>6</sup>** ..... **G08C 19/12**

A method for selecting a command set from a group of command sets stored in the remote control. Each remote control command set includes a set of commands for operating at least one of various remotely controllable devices. A command, whose effect is observable in the remotely controlled device is assigned to one of the user actuated keys. The keys are pressed one by one until the user observes the desired effect on the remotely controlled device. The user then signals the remote control to exit the select procedure with the remote control setting the remote control to transmit future commands from the command set including the last transmitted effects observable command having the observed desired effect.

[52] **U.S. Cl.** ..... 341/176; 340/825.37; 340/825.69; 340/825.72; 359/148; 379/102

[58] **Field of Search** ..... 341/176, 173, 341/174, 175, 23; 348/734; 359/148; 364/709.14, 709.15, 709.16; 379/102; 340/825.37, 825.69, 825.72

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

4,703,359 10/1987 Rumbolt et al. .... 340/825.69  
4,746,919 5/1988 Reitmeier ..... 340/825.72  
4,825,209 4/1989 Sasaki et al. .... 340/825.37

**16 Claims, 6 Drawing Sheets**

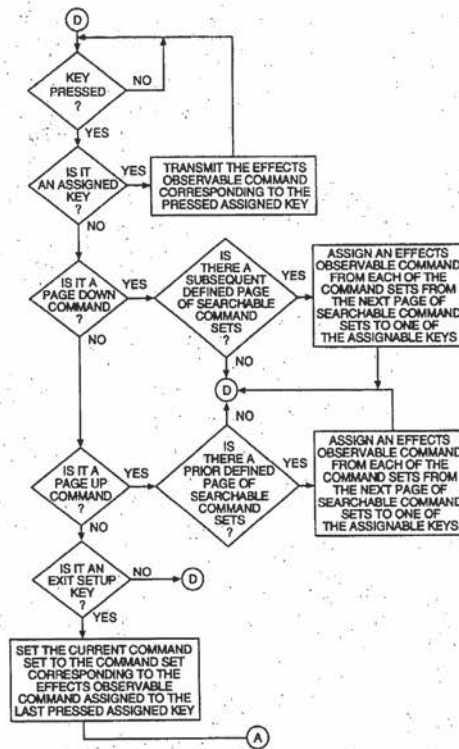


FIG. 1

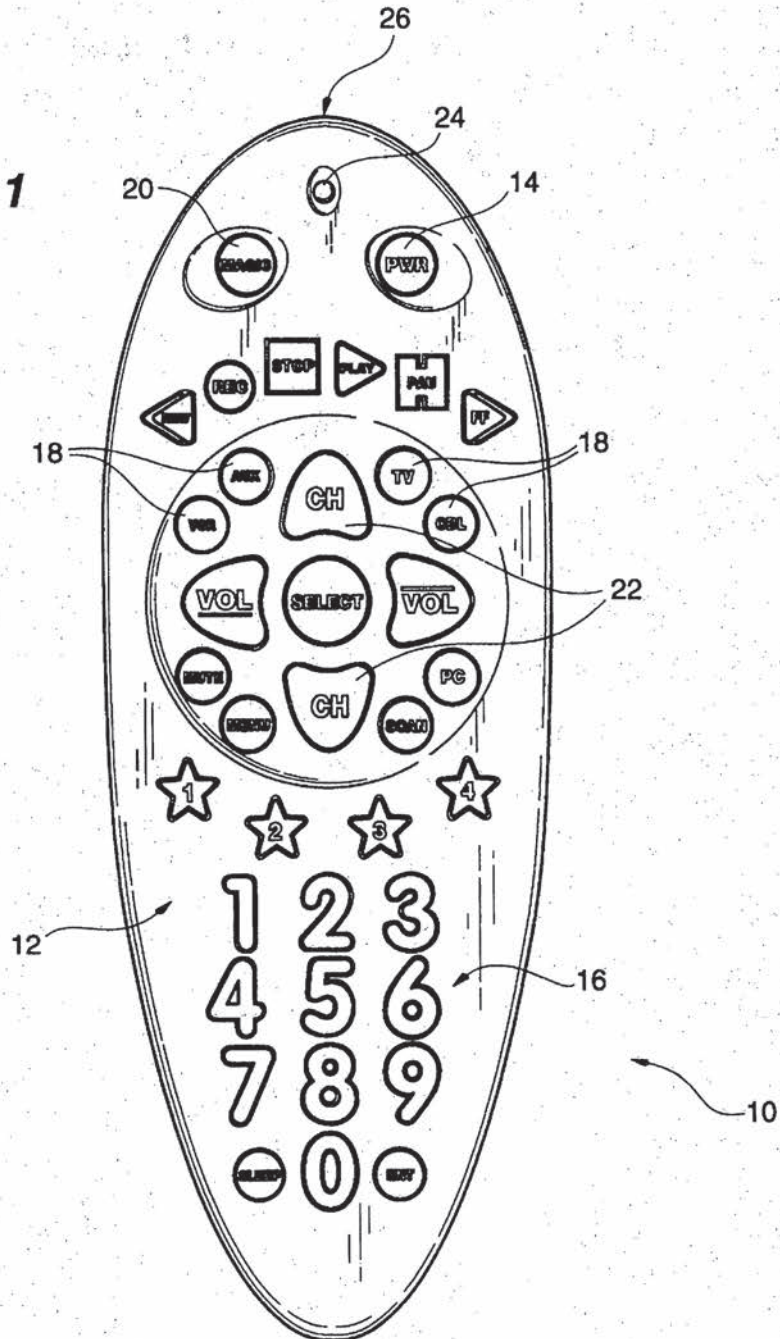
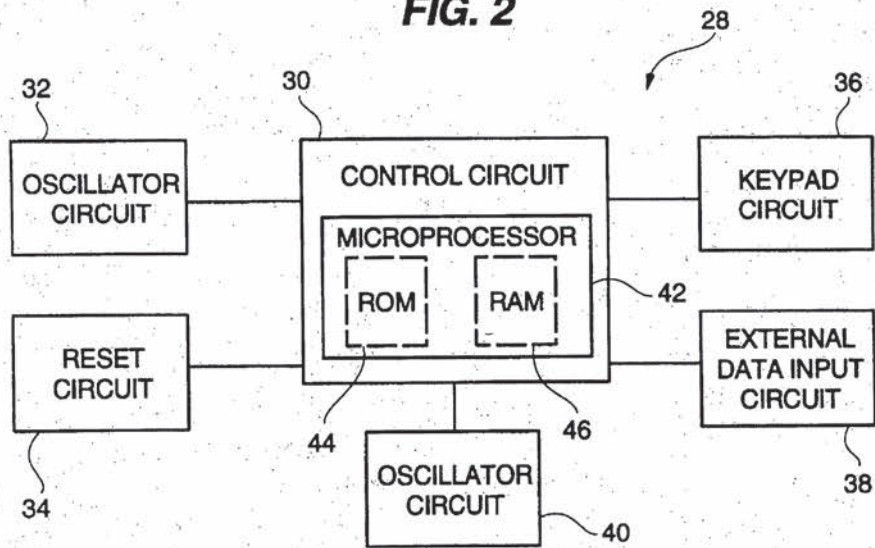


FIG. 2





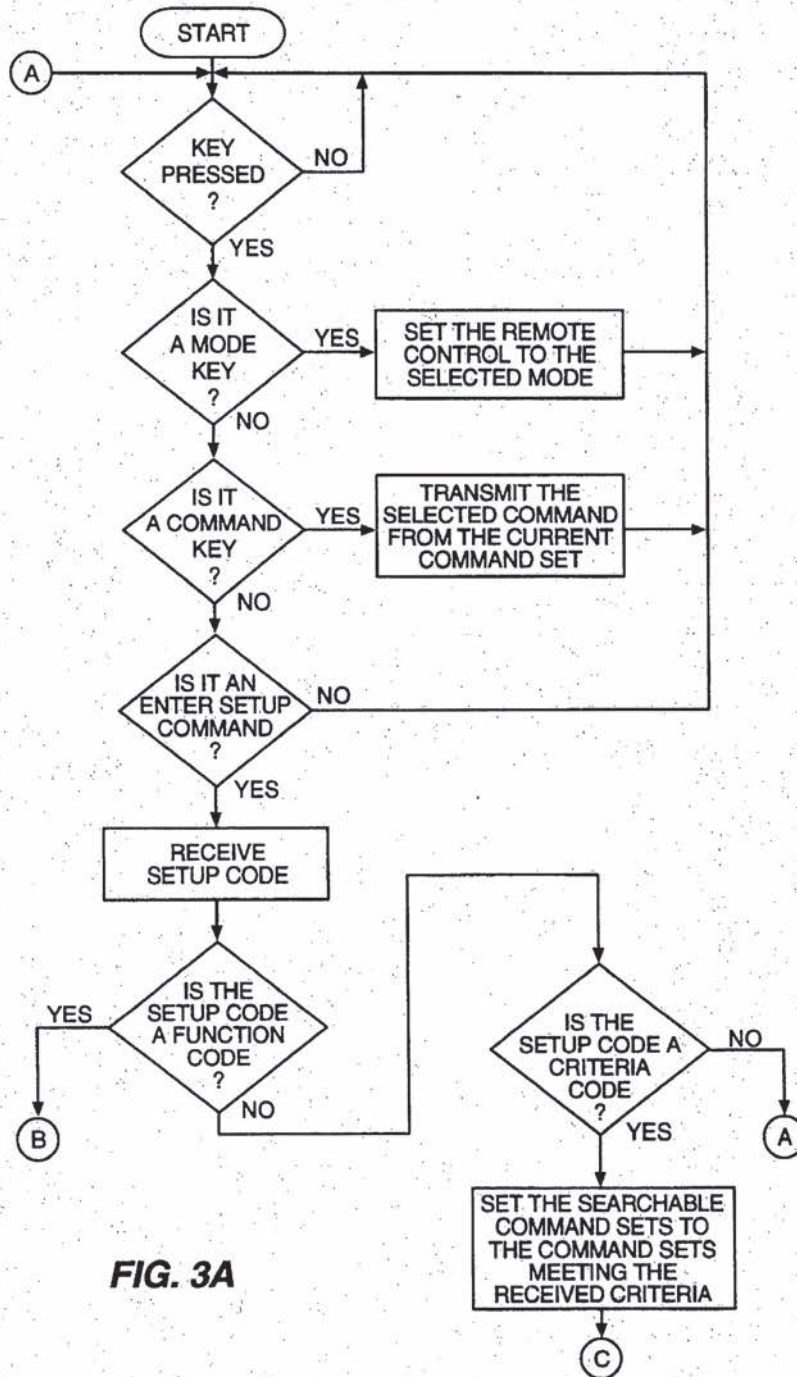


FIG. 3A

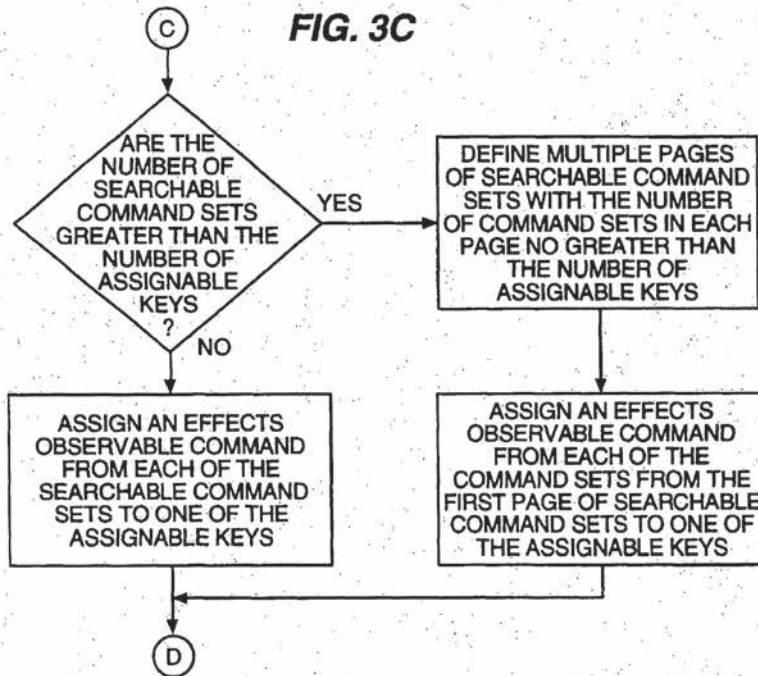
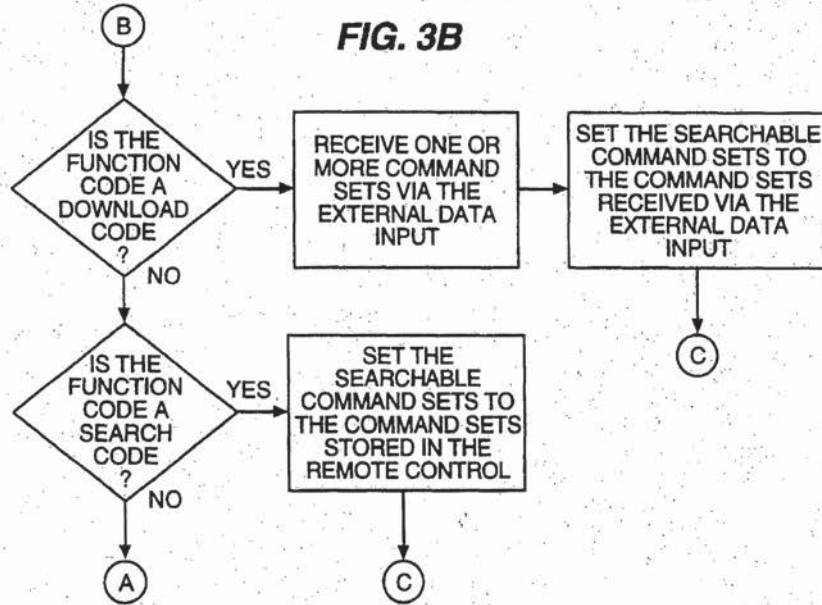
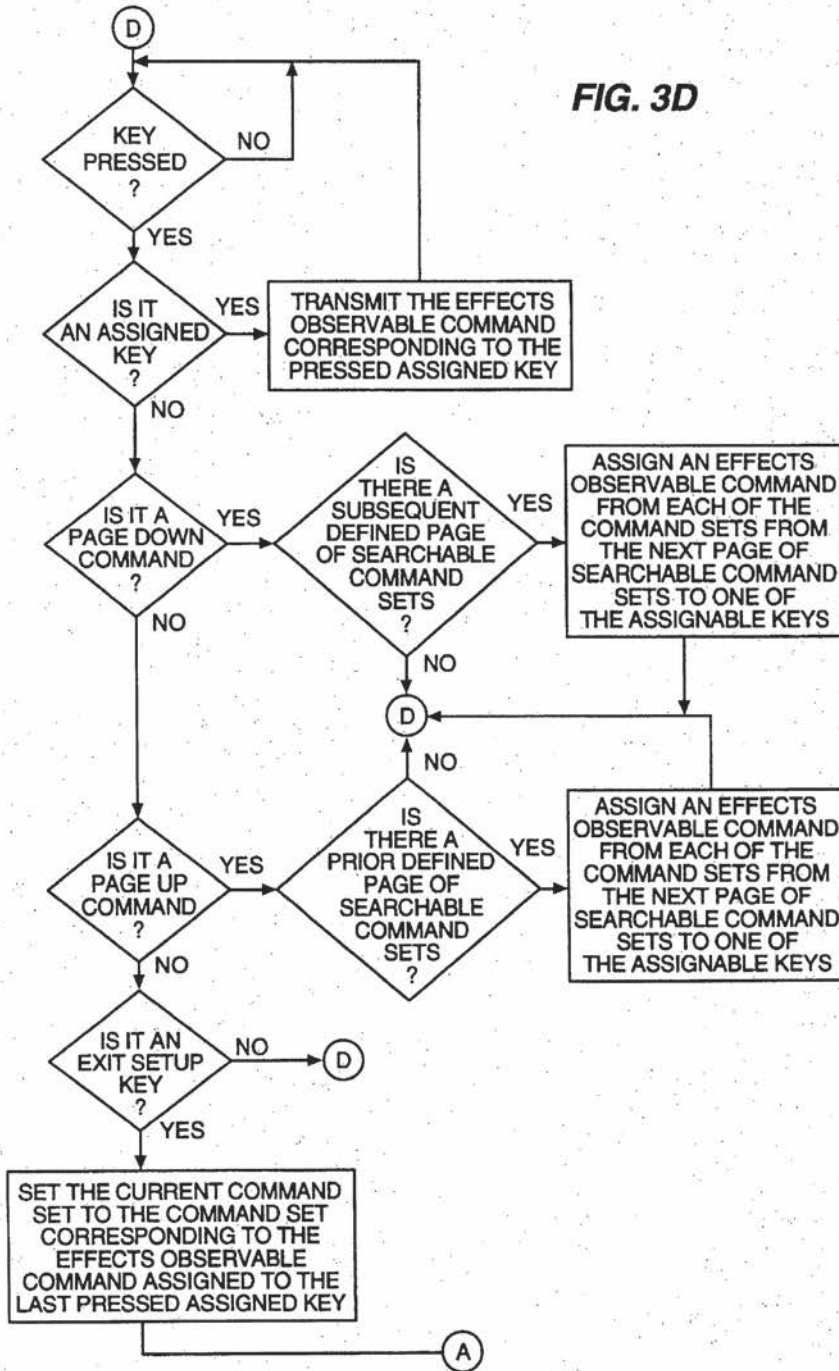
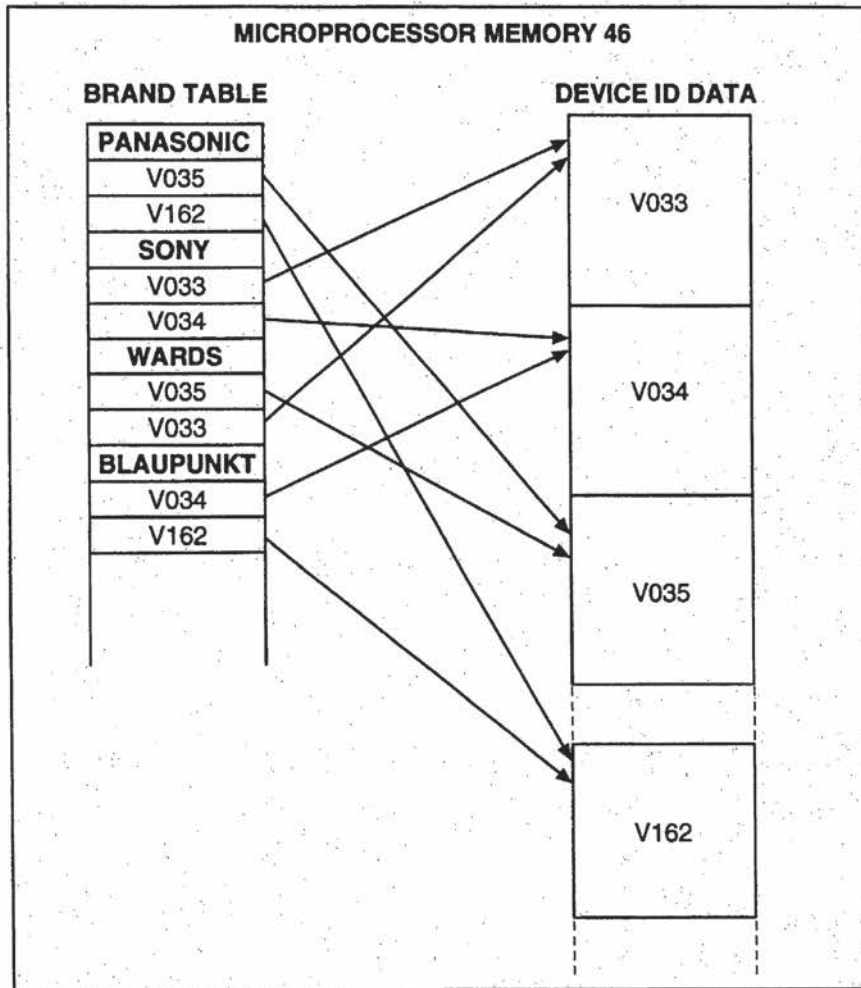


FIG. 3D





**FIG. 4**

## METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention relates to a method for selecting a remote control command set from a group of multiple command sets stored in a remote control, for controlling various remotely controllable electronic devices.

2. Description of the Related Art Including Information Disclosed Under 37 CFR §§ 1.97-1.99

Heretofore, various systems for providing methods of selecting a remote control command set from a group of multiple command sets have been proposed. Several examples of analogous and non-analogous methods are disclosed in the following U.S. Patents:

U.S. Pat. No.	Patentee
4,703,359	Rumbolt et al.
4,959,810	Darbee et al.
5,485,149	Takiguchi et al.
German Patent Publications:	
DE 33 13 493 A1	Telefunken

The Rumbolt et al., U.S. Pat. No. 4,703,359 discloses a method for adapting a remote control to generate a remote command signal having the appropriate signal structure for controlling a selected one of a plurality of electronic devices. Once the method is initiated, the remote control automatically cycles through the entire list of different format command lists stored within the remote control's internal memory, transmitting a test command to the desired device to be controlled until the user interrupts the cycle. Interrupting the cycle of test commands causes the remote control to transmit future commands using the signal structure of the last test command transmitted prior to interrupting the cycle.

The Darbee et al., U.S. Pat. No. 4,959,810 discloses a universal remote control system that provides for two methods for selecting a remote control command set.

The first method is a step and set procedure in which the list of command sets stored in the remote control are stepped through both forward and backwards allowing a test command from the currently selected command set to be transmitted. The user observes the effects of the test command to determine if the currently selected command set is compatible with the device the user is wanting to control. When the user finds a command set compatible with the device to be controlled, the user exits the procedure with the remote control set to the compatible command set.

The second method is a direct entry—quick set procedure in which the user looks up the make and model of the device to be controlled from a printed list of devices. The user then directly inputs a corresponding code associated with the make and model of the device to be controlled to index the proper command set from the remote control's internal command set library.

The Takiguchi et al., U.S. Pat. No. 5,485,149 discloses a method for selecting a set of remote control signals from multiple remote control signal groups, where each group contains multiple sets of remote control signals. Each remote control signal group is assigned to one of the operating keys.

Upon entering a select setting mode, the particular set of remote control signals within one of the signal groups is selected by the number of times the assigned operating key is pressed. A single keypress will select the first set of remote control signals within the remote control signal group assigned to the pressed key. Pressing the same key a second time will select the second set of remote control signals within the assigned remote control signal group. Similarly, subsequent key presses of the same key will select subsequent sets of remote control signals.

The Telefunken, German published patent application DE 33 13 493 A1 discloses a remote control having a table containing multiple columns of control signals each column containing the code signals for operating a particular device and a mechanism for selecting the appropriate column of control signals.

The remote control provides for the selection of the appropriate column of control signals by automatically cycling through the multiple columns of control signals, transmitting a trial command, and observing the effect of the trial command on the device to be remotely operated. When the desired result is observed, the user signals the remote control that a successful command has been transmitted. The remote control then eliminates from consideration all columns of control signals that do not contain the matched successful trial command. If more than one column of control signals match the successful trial command, the remote control repeats the above procedure using a different trial command and cycling through only the remaining columns of control signals until all columns of command signals have been eliminated except one.

### SUMMARY OF THE INVENTION

According to the present invention there is provided a method for selecting a remote control command set from a group of multiple command sets stored in a remote control, for controlling various remotely controllable electronic devices. The method includes assigning multiple effects observable commands (e.g. a "power off" command) from a group of command sets stored in the remote control to multiple user actuated switches or keys of the remote control.

The user then actuates the switches or keys, one at a time, with the corresponding assigned effects observable command being transmitted. The user continues to actuate keys until the user observes the remotely controlled device responding properly to the transmitted command. The user then terminates the selection procedure with the remote control setting the active command set to the command set from which the successful effects observable command was assigned.

By assigning a single command set to a single user actuated key, the negative effects of a user key actuation that results in a double key actuation or not registering due to failure to fully actuate the key is minimized. If the user suspects the key was not fully actuated, the user can repeat that particular key actuation. If the user inadvertently causes the remote to detect a double key actuation, the remote control merely sends the effects observable command from the assigned command set twice. If the user wishes to actuate a particular key several times in order to confirm its effect on the responding device, he may do so at any point during the process without affecting the process.

The command sets stored in the remote control can be permanently stored in the remote control at the time of

manufacture or downloaded from an external source. The ability to download command sets from an external source allows the remote control to provide remote control functionality with future devices whose particular transmission protocol or commands have not yet been determined.

The method for selecting a remote control command set from a group of multiple command sets stored in a remote control, further provides for inputting a criteria code for limiting or filtering the list of command sets to be searched through to those command sets that work with devices meeting a particular criteria. In this way, the entire list of command sets do not need to be searched through. Similarly it does not require the user to know all the details about a particular device in order to determine and set the appropriate command set.

Where the number of command sets to be searched through exceeds the number of keys with which the effects observable commands are assigned, the method additionally provides for the ability to page through sub-groups of command sets. Each subgroup being no larger than the number of assignable keys.

Where a remote control provides for multiple modes, each mode providing for the remote operation of a different device (i.e. TV, VCR, cable box, etc.), a different command set can be selected for each of the available modes.

Other objects and advantages of the present application will be apparent from the detailed description and drawings which follow.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plan view of the top face of a remote control incorporating the method for selecting a remote control command set from a group of multiple command sets stored in the remote control.

FIG. 2 is a block diagram of the internal circuitry of the remote control shown in FIG. 1.

FIGS. 3A, 3B, 3C and 3D are each portions of a flow chart that together provide instructions for assisting in the control of the remote control with particular emphasis on the steps that provide for the method of selecting a remote control command set from a group of multiple command sets stored in the remote control.

FIG. 4 is schematic layout of a portion of a BRAND TABLE and of a list of DEVICE ID DATA stored in a memory (RAM) of a microprocessor shown in FIG. 2.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in greater detail, there is illustrated in FIG. 1 a plan view of the top face of a remote control 10 incorporating the method for selecting a remote control command set from a group of multiple command sets stored in the remote control.

The remote control includes a set of user actuated keys 12, including a power key 14, numeric keys 16, mode keys 18, a magic key 20, and channel up and channel down keys 22. The remote control 10 further includes a visual LED 24 and an infra-red LED (not shown), located at the front 26 of the remote control 10.

FIG. 2 is a block diagram of the internal circuitry 28 of the remote control shown in FIG. 1. The internal circuitry 28 is similar to the circuitry described in *Escobosa et al.*, U.S. Ser. No. 08/251,336, filed May 31, 1994, now U.S. Pat. No.

5,537,463, whose specification is incorporated herein by reference.

The internal circuitry 28 includes a control circuit 30, an oscillator circuit 32, a reset circuit 34, a key pad circuit 36, an external data input circuit 38, and an LED driver circuit 40.

The control circuit 30 monitors and controls the overall functioning of the remote control 10. In a preferred embodiment it incorporates a microprocessor 42, with associated semiconductor memory in the form of ROM 44 and/or RAM 46. The semiconductor memory is used to store both program operating instructions and program data for assisting in the control of the remote control 10.

The oscillator circuit 32 provides a clocking signal to the control circuit 30. The reset circuit 34 provides a reset signal to the control circuit when the internal circuitry 28 is initially powered up. The key pad circuit 36 incorporates the user actuated keys 12 and provides circuitry in conjunction with the control circuit 30 for decoding which one of the user actuated keys 12 has been actuated.

The external data input circuit 38 receives data from a source external to the remote control 10. The particular circuitry can take the form of any one of many traditional forms of communication, whether wired or wireless. In one, preferred embodiment the external data communication is accomplished by a magnetic modem similar to the one described in the *Escobosa* application, U.S. Ser. No. 08/251,336, filed May 31, 1994, referred to above.

The LED driver circuit 40 is coupled to the control circuit 30 and incorporates the visual LED 24 and the infra-red LED (not shown) located at the front 26 of the remote control 10 and provides the LEDs with driving power in response to signals received from the control circuit 30. The visual LED 24 provides the user with visual feedback concerning the remote control's 10 activity. The infra-red LED provides the signalling capability for sending the remote control signals to the devices to be controlled.

FIGS. 3A, 3B, 3C and 3D are each portions of a flow chart that together provide instructions for assisting in the control of the remote control with particular emphasis on the steps that provide for the method of selecting a remote control command set from a group of multiple command sets stored in the remote control.

FIG. 3A shows the starting point of the instructions to be executed by the microprocessor 42 in controlling the remote control 10. The flow chart begins by waiting for an interrupt or an indication that a key or switch 12 has been pressed or actuated. Upon actuation of a key or switch 12, a determination is made as to which key has been pressed.

If a mode key 18 is pressed the remote control 10 sets the current command set from which commands will be transmitted to the command set chosen for the selected mode. The mode keys 18 preferably include separate mode keys 18 for a TV, a VCR, a Cable Box, as well as any other device for which an infra-red remote control transmitter could be used to remotely control the device.

If a command key is pressed, the remote control 10 transmits the particular operating command associated with the pressed command key from the currently selected command set.

If an enter setup key is pressed the remote control 10 enters a setup mode used to configure the remote control 10. In the preferred embodiment the enter setup key is equivalent to the magic key 20, however it can take any one of various forms including a slider switch or a combination of key presses.

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Upon entering the setup mode, the remote control 10 waits until it receives a set up code. If the setup code is a setup function code, the execution of operating instructions of the remote control 10 branches to FIG. 3B to perform instructions to determine which function code has been requested to be performed.

If the setup code is a criteria code, indicating a particular subset of command code sets, the remote control sets the searchable command sets to the command sets meeting the received criteria and branches the execution of instructions to FIG. 3C to perform instructions to select a new command set for the currently active mode.

The criteria code allows the remote control to restrict the number of searchable command sets to only those command sets used with devices meeting a particular criteria and/or to determine a different order of assigning the effects observable commands.

Preferably the effects observable commands will be assigned to the user actuated keys in order of decreasing popularity. However a command set that is not very popular when one considers the entire list of stored command sets used for operating a television, may be the most popular command set used for operating a television manufactured by a particular manufacturer. The use of a criteria code representing a particular manufacturer by the user can be used to establish a different assignment order based on the popularity of command sets following the indicated criteria.

Examples of different possible criteria include codes for different manufacturers, codes for equipment manufactured or purchased between a specified time period, devices sold through a particular retail outlet, etc.

Additionally in some embodiments it is possible to allow for the entry of multiple criteria in order to further isolate the proper command set for operating a particular device.

If the setup code is neither a function code nor a setup code, it is assumed the user inadvertently entered the setup mode and the execution of the operating instructions of the remote control 10 branches to the start of the instructions in FIG. 3A.

FIG. 3B shows the program steps performed when a function code is received after entering the setup mode. First a determination is made to identify which function is being requested to be executed. If the function code is determined to be a download code, the remote control executes a procedure to receive one or more command sets via the external data input. The searchable subset of command sets are defined to include the received command sets and the execution of the operating instructions branches to FIG. 3C.

Similarly, an alternative embodiment can allow the received command sets to supplement the command sets previously stored in the remote control 10.

In the embodiment disclosed in FIGS. 3A through 3D the remote control enters a command set selection procedure after downloading the received data, however it is not necessary for the selection procedure to be entered immediately after downloading of the received data, but can be delayed until the user chooses. Similarly, the data received does not necessarily have to be one or more command sets, but can include updates to already stored command sets or other related data.

If the function code is a search code, the searchable set of commands is defined to include the command sets stored in the remote control without first inputting a criteria code or downloading command sets. This allows the user to directly enter the procedure to select the new command set without first entering a criteria code or performing another function.

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FIGS. 3C and 3D shows the program steps for selecting the new command set from the list of searchable command sets. Initially, as shown in FIG. 3C a determination is made whether the number of searchable command sets exceeds the number of assignable user actuated keys or switches.

If the number of searchable command sets is greater than the number of assignable user actuated keys or switches the searchable command sets are broken up into multiple pages of command sets no greater in size than the number of assignable user actuated keys that can be paged through using the channel up and channel down keys 22. The effects observable commands from the currently selected page, initially the first page, of command sets is assigned to the assignable user actuated keys.

If the number of searchable command sets is equal to or less than the number of assignable user actuated keys or switches, the effects observable commands from the searchable command sets, forming a single page of command sets, are assigned to the assignable user actuated keys.

After the effects observable commands for the currently selected page have been assigned, the remote control 10 waits for a key to be pressed. When a key press has been detected the remote control 10 determines if the key pressed is an assignable user actuated key, a key which has had an effects observable command assigned to it. If it is then the remote control transmits the assigned effects observable command (e.g., a "power off" command) to the device to be remotely controlled and loops back to wait for another key press. The user observes the device to be remotely controlled for a visual indication of a compatible command.

In the preferred embodiment the assignable user actuated keys include the power key 14 and the numeric keys 16. The assignable user actuated keys are assigned in the order of the power key 14 first, followed by the numeric keys 16 in order starting with the "one" key and ending with the "zero" key. Additionally the preferred effects observable command is a power off command.

If the key pressed is a page down command (i.e. a channel down key 22), and a subsequent page of command sets is defined. Then the remote control 10 reassigns an effects observable command from each of the command sets from the subsequent page of command sets to the assignable user actuated keys and loops back to wait for another key press.

If the key pressed is a page up command (i.e. a channel up key 22), and a prior page of command sets is defined, then the remote control reassigns an effects observable command from each of the command sets from the prior page of command sets to the assignable user actuated keys and loops back to wait for another key press.

If the key pressed is an exit setup key (i.e. a magic key 20), then the remote control 10 sets the current command set for the currently selected mode to the command set corresponding to the effects observable command assigned to the last pressed assigned key. Typically the user exits the setup procedure when the user observes the desired effect on the device to be controlled by the remote control 10, indicating that a compatible command set has been located.

In this way a method for selecting a compatible command set from a library of multiple command sets can be realized. Similarly different command sets can be selected for each of the different device modes by selecting the mode key 18 corresponding to the desired mode prior to entering the setup procedure.

Often times, a plurality of brands of electronic devices, e.g., television sets may share a device entry code. For example, the Panasonic code, 035, is also the entry code for

a private labelled television set sold by Montgomery Wards. This is illustrated in FIG. 4.

Additionally, as shown in FIG. 4, the priority order may be different from brand name to brand name, even though they use the same device entry code. For example the Sony number 1 code is 033, but this device entry code is only the Wards number 2 code.

From the foregoing description, it will be apparent that the method for selecting a remote control command set from a group of multiple command sets stored in a remote control, for controlling various remotely controllable electronic devices of the present invention has a number of advantages, some of which have been described above and others of which are inherent in the method of the invention. Also it will be understood that modifications can be made to the method for selecting a remote control command set described above without departing from the teachings of the invention.

I claim:

1. A method for selecting an appropriate one of a plurality of command sets stored in a remote control having a plurality of assignable user actuated switches or keys for controlling a remotely controllable electronic device, comprising the steps of:

- (a) assigning an effects observable command from each of said plurality of command sets to one of said plurality of assignable user actuated switches or keys, each assigned, effects observable command to be transmitted when the corresponding one of the assignable user actuated switches or keys is actuated;
- (b) actuating sequentially and individually each one of the plurality of assignable user actuated switches or keys, to individually transmit each assigned effects observable command until the proper effect is observed;
- (c) halting the actuating of the plurality of assignable user actuated switches or keys; and
- (d) setting the remote control to transmit future remote control commands from the command set containing the last transmitted effects observable command.

2. The method of claim 1, further comprising the step of receiving the plurality of command sets from an external source prior to the step of assigning an effects observable command.

3. The method of claim 2, wherein said external source communicates with the remote control via a wireless signal transmission.

4. The method of claim 2, wherein said external source communicates with the remote control via a wired signal transmission.

5. The method of claim 2, wherein said external source communicates with the remote control via a magnetic modem coupled to a telephone handset.

6. The method of claim 1, further comprising the step of receiving a code input from the user and wherein said code input is used to identify a subset of command sets meeting a particular criteria, from which said effects observable commands are assigned from.

7. The method of claim 6, wherein said particular criteria refer to command sets which control electronic devices manufactured by a specific manufacturer.

8. The method of claim 6, wherein said particular criteria refer to command sets which control electronic devices manufactured within a specific time period.

9. The method of claim 6, wherein said particular criteria refer to command sets which control electronic devices sold through a particular retail outlet.

10. The method of claim 1, wherein said effects observable command is a power off command.

11. The method of claim 1, wherein said plurality of assignable user actuated switches or keys include a power key and numeric keys.

12. The method of claim 1, wherein said remote control further includes a plurality of user actuated mode keys for selecting one of a plurality of modes and said method further includes the step of selecting one of the plurality of modes prior to the step of assigning an effects observable command, such that, the method for selecting an appropriate one of a plurality of command sets can be performed to separately set a different command set for each mode.

13. The method of claim 1, wherein said remote control further includes a page down user actuated key and a page up user actuated key and, when the number of command sets exceed the number of assignable user actuated switches or keys, said method further includes the steps of: assigning an effects observable command from each of said plurality of command sets in a subsequent group of command sets to one of said plurality of assignable user actuated switches or keys, when a page down user actuated key is actuated; and assigning an effects observable command from each of said plurality of command sets in a prior group of command sets to one of said plurality of assignable user actuated switches or keys, when a page up user actuated key is actuated.

14. The method of claim 1, wherein the order of said effects observable commands from said plurality of command sets is assigned to said plurality of assignable user actuated switches or keys based upon decreasing popularity of usage of each of said command sets.

15. The method of claim 14, further comprising the step of receiving a code input from the user and wherein said code input indicates a particular criteria and is used to further determine the order said effects observable commands are assigned to said plurality of assignable user actuated switches or keys based upon decreasing popularity of usage of each of said command sets conforming to said criteria.

16. An apparatus for selecting an appropriate one of a plurality of command sets stored in a remote control having a plurality of assignable user actuated switches or keys for controlling a remotely controllable electronic device, comprising:

- means for assigning an effects observable command from each of the plurality of command sets to one of said plurality of assignable user actuated switches or keys;
- means for transmitting said effects observable command when the corresponding one of said plurality of assignable user actuated switches or keys is actuated;
- means for indicating the halting of the actuation of the plurality of assignable user actuated switches or keys; and
- means for setting the remote control to transmit future remote control commands from the command set containing the last transmitted effects observable command.

\* \* \* \* \*



PATENT APPLICATION SERIAL NO. 08/636666

U.S. DEPARTMENT OF COMMERCE  
PATENT AND TRADEMARK OFFICE  
FEE RECORD SHEET

010 W) 05/00/06 03636666  
1 201 375.00 CR 96030

PTO-1556  
(5/87)

08/636666



<b>PATENT APPLICATION TRANSMITTAL LETTER</b>	ATTORNEY'S DOCKET NO. 96030
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TO THE ASSISTANT COMMISSIONER FOR PATENTS:  
 Transmitted herewith for filing is the patent application of PATRICK H. HAYES and KIMTHOA T. NGUYEN  
 for METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET

- Priority is claimed under 35 USC, Sec. 120 from prior application Serial No. \_\_\_\_\_ filed on \_\_\_\_\_
- Priority is claimed under 35 USC, Sec. 119 from \_\_\_\_\_ Application No. \_\_\_\_\_ filed on \_\_\_\_\_

Enclosed are:

- six (6) sheets of  formal  informal drawings.
- an assignment of the invention to Universal Electronics Inc. together with a Patent Assignment Recordation Cover Sheet
- a certified copy of the \_\_\_\_\_ application
- associate power of attorney.
- verified statement to establish small entity status under CFR 1.9 and 1.27.

**CLAIMS AS FILED**

FOR	NO. FILED	NO EXTRA
BASIC FEE		
TOTAL CLAIMS	16 - 20 =	0 *
INDEPENDENT CLAIMS	2 - 3 =	0 *
MULTIPLE DEPENDENT CLAIM PRESENT		

**SMALL ENTITY**

RATE	FEE
	\$375
x \$11=	-0-
x \$39=	-0-
+ \$125=	
<b>TOTAL</b>	<b>\$375</b>

**OTHER THAN SMALL ENTITY**

RATE	FEE
	\$750
x \$22=	
x \$78=	
+ \$250=	
<b>TOTAL</b>	

\* If the difference in col 1 is less than zero, enter "0" in col 2

- Please charge Deposit Account No. \_\_\_\_\_ in the amount of \$ \_\_\_\_\_
- A duplicate copy of this sheet is enclosed.
- A check in the amount of \$ 375.00 to cover the filing fee is enclosed.
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April 23, 1996  
 date

*Thomas R. Vigil*  
 signature : Thomas R. Vigil, Reg. No. 24,542



08/636666

PATENT  
USSN - New U.S. Patent Application  
Atty Docket 96030

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

New patent application:	Applicant(s):
<input checked="" type="checkbox"/> Regular	Patrick H. Hayes and Kimthoa T. Nguyen
<input type="checkbox"/> Convention	
<input type="checkbox"/> File Wrapper Continuation	Serial No.
<input type="checkbox"/> Divisional/Continuation	Title:
<input type="checkbox"/> Continuation-in-Part	METHOD FOR SELECTING A REMOTE CONTROL
<input type="checkbox"/> Reissue Application	COMMMANT SET
<input type="checkbox"/> PCT National Phase	PCT No. _____
<input type="checkbox"/> PCT Application	

CERTIFICATE OF EXPRESS MAIL DEPOSIT

"Express Mail" Mailing Label No. EM 311368749 US  
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I hereby certify that this paper, or fee, is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Safera-Van Takla  
(Typed or printed name of person mailing fee) or paper)  
Safera-Van Takla  
(Signature of person mailing paper or fee)

The documents enclosed with and being filed with this paper are:

<input checked="" type="checkbox"/>	application transmittal letter
<input checked="" type="checkbox"/>	Patent application:
<input type="checkbox"/>	<u>12</u> pages of specification
<input type="checkbox"/>	<u>3</u> pages of claims containing <u>16</u> claims
<input checked="" type="checkbox"/>	Abstract of the Disclosure
<input type="checkbox"/>	<u>6</u> sheets of drawings containing <u>7</u> FIG'S.
<input checked="" type="checkbox"/>	executed Declaration and Power of Attorney
<input type="checkbox"/>	copy of Declaration and Power of Attorney from parent application
<input type="checkbox"/>	specification and claims in foreign language
<input type="checkbox"/>	PCT Article 19 Amendment
<input type="checkbox"/>	translation of PCT Article 19 Amendment
<input checked="" type="checkbox"/>	Assignment (executed)
<input checked="" type="checkbox"/>	Small Entity Declaration(s) (two (2) executed)

<input type="checkbox"/>	translation of amended specification and/or claims
<input checked="" type="checkbox"/>	Check(s) in the amounts of: <u>\$375.00 and \$40.00</u>
<input type="checkbox"/>	Petition for Extension of Time in prior Application
<input type="checkbox"/>	Serial No. _____ for _____ month(s)
<input type="checkbox"/>	Preliminary Amendment Before Action
<input type="checkbox"/>	Disclosure Statement including USPTO Form 1449 and copies of _____ reference(s)
<input type="checkbox"/>	Letter re application being filed with no filing fee and no executed Declaration
<input checked="" type="checkbox"/>	Patent Assignment Recordation Cover Sheet



Application for Letters Patent

OF the UNITED STATES OF AMERICA by -

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and

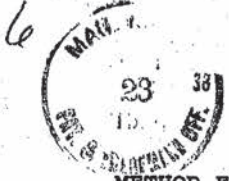
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All being citizens of -

the UNITED STATES OF AMERICA

For:

METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET



375-201

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08/636666

METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET

BACKGROUND OF THE INVENTION

1. Field of the Invention.

The present invention relates to a method for selecting a remote control command set from a group of multiple command sets stored in a remote control, for controlling various remotely controllable electronic devices.

2. Description of the related art including information disclosed under 37 CFR §§ 1.97-1.99.

Heretofore, various systems for providing methods of selecting a remote control command set from a group of multiple command sets have been proposed. Several examples of analogous and non-analogous methods are disclosed in the following U.S. Patents:

15	<u>U.S. Patent No.</u>	<u>Patentee</u>
	4,703,359	Rumbolt et al.
	4,959,810	Darbee et al.
	5,485,149	Takiguchi et al.

German Patent Publications:

20	DE 33 13 493 A1	Telefunken
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The Rumbolt et al., U.S. Patent No. 4,703,359 discloses a method for adapting a remote control to generate a remote command signal having the appropriate signal structure for controlling a selected one of a plurality of electronic devices. Once the method is initiated, the remote control automatically cycles through the entire list of different format command lists stored within the remote control's internal memory, transmitting a test command to the desired device to be controlled until the user interrupts the cycle. Interrupting the cycle of test commands causes the remote control to transmit future commands using the signal structure of the last test command transmitted prior to interrupting the cycle.

The Darbee et al., U.S. Patent No. 4,959,810 discloses a universal remote control system that provides for two methods for selecting a remote control command set.

The first method is a step and set procedure in which the list of command sets stored in the remote control are stepped through both forward and backwards allowing a test command from

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the currently selected command set to be transmitted. The user observes the effects of the test command to determine if the currently selected command set is compatible with the device the user is wanting to control. When the user finds a command set compatible with the device to be controlled, the user exits the procedure with the remote control set to the compatible command set.

The second method is a direct entry - quick set procedure in which the user looks up the make and model of the device to be controlled from a printed list of devices. The user then directly inputs a corresponding code associated with the make and model of the device to be controlled to index the proper command set from the remote control's internal command set library.

The Takiguchi et al., U.S. Patent No. 5,485,149 discloses a method for selecting a set of remote control signals from multiple remote control signal groups, where each group contains multiple sets of remote control signals. Each remote control signal group is assigned to one of the operating keys.

Upon entering a select setting mode, the particular set of remote control signals within one of the signal groups is selected by the number of times the assigned operating key is pressed. A single keypress will select the first set of remote control signals within the remote control signal group assigned to the pressed key. Pressing the same key a second time will select the second set of remote control signals within the assigned remote control signal group. Similarly, subsequent key presses of the same key will select subsequent sets of remote control signals.

The Telefunken, German published patent application DE 33 13 493 A1 discloses a remote control having a table containing multiple columns of control signals each column containing the code signals for operating a particular device and a mechanism for selecting the appropriate column of control signals.

The remote control provides for the selection of the appropriate column of control signals by automatically cycling through the multiple columns of control signals, transmitting a trial command, and observing the effect of the trial command on the device to be remotely operated. When the desired result

is observed, the user signals the remote control that a successful command has been transmitted. The remote control then eliminates from consideration all columns of control signals that do not contain the matched successful trial  
5 command. If more than one column of control signals match the successful trial command, the remote control repeats the above procedure using a different trial command and cycling through only the remaining columns of control signals until all columns of command signals have been eliminated except one.

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**SUMMARY OF THE INVENTION**

According to the present invention there is provided a method for selecting a remote control command set from a group of multiple command sets stored in a remote control, for  
5 controlling various remotely controllable electronic devices. The method includes assigning multiple effects observable commands (e.g. a "power off" command) from a group of command sets stored in the remote control to multiple user actuated switches or keys of the remote control.

10 The user then actuates the switches or keys, one at a time, with the corresponding assigned effects observable command being transmitted. The user continues to actuate keys until the user observes the remotely controlled device responding properly to the transmitted command. The user then  
15 terminates the selection procedure with the remote control setting the active command set to the command set from which the successful effects observable command was assigned.

By assigning a single command set to a single user actuated key, the negative effects of a user key actuation that  
20 results in a double key actuation or not registering due to failure to fully actuate the key is minimized. If the user suspects the key was not fully actuated, the user can repeat that particular key actuation. If the user inadvertently causes the remote to detect a double key actuation, the remote  
25 control merely sends the effects observable command from the assigned command set twice. If the user wishes to actuate a particular key several times in order to confirm its effect on the responding device, he may do so at any point during the process without affecting the process.

30 The command sets stored in the remote control can be permanently stored in the remote control at the time of manufacture or downloaded from an external source. The ability to download command sets from an external source allows the remote control to provide remote control functionality with  
35 future devices whose particular transmission protocol or commands have not yet been determined.

The method for selecting a remote control command set from a group of multiple command sets stored in a remote control, further provides for inputting a criteria code for limiting or



filtering the list of command sets to be searched through to those command sets that work with devices meeting a particular criteria. In this way, the entire list of command sets do not need to be searched through. Similarly it does not require the user to know all the details about a particular device in order to determine and set the appropriate command set.

Where the number of command sets to be searched through exceeds the number of keys with which the effects observable commands are assigned, the method additionally provides for the ability to page through sub-groups of command sets. Each sub-group being no larger than the number of assignable keys.

Where a remote control provides for multiple modes, each mode providing for the remote operation of a different device (i.e. TV, VCR, cable box, etc.), a different command set can be selected for each of the available modes.

Other objects and advantages of the present application will be apparent from the detailed description and drawings which follow.

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**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a top plan view of the top face of a remote control incorporating the method for selecting a remote control command set from a group of multiple command sets stored in the remote control.

FIG. 2 is a block diagram of the internal circuitry of the remote control shown in FIG. 1.

FIGS. 3A, 3B, 3C and 3D are each portions of a flow chart that together provide instructions for assisting in the control of the remote control with particular emphasis on the steps that provide for the method of selecting a remote control command set from a group of multiple command sets stored in the remote control.

FIG. 4 is schematic layout of a portion of a BRAND TABLE and of a list of DEVICE ID DATA stored in a memory (RAM) of a microprocessor shown in FIG. 2.

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**DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring now to the drawings in greater detail, there is illustrated in FIG. 1 a plan view of the top face of a remote control 10 incorporating the method for selecting a remote control command set from a group of multiple command sets stored in the remote control.

The remote control includes a set of user actuated keys 12, including a power key 14, numeric keys 16, mode keys 18, a magic key 20, and channel up and channel down keys 22. The remote control 10 further includes a visual LED 24 and an infra-red LED (not shown), located at the front 26 of the remote control 10.

FIG. 2 is a block diagram of the internal circuitry 28 of the remote control shown in FIG. 1. The internal circuitry 28 is similar to the circuitry described in Escobosa et al., USSN 08/251,336, filed May 31, 1994, now U.S. Patent No. 5,537,463, whose specification is incorporated herein by reference. df.

The internal circuitry 28 includes a control circuit 30, an oscillator circuit 32, a reset circuit 34, a key pad circuit 36, an external data input circuit 38, and an LED driver circuit 40.

The control circuit 30 monitors and controls the overall functioning of the remote control 10. In a preferred embodiment it incorporates a microprocessor 42, with associated semiconductor memory in the form of ROM 44 and/or RAM 46. The semiconductor memory is used to store both program operating instructions and program data for assisting in the control of the remote control 10.

The oscillator circuit 32 provides a clocking signal to the control circuit 30. The reset circuit 34 provides a reset signal to the control circuit when the internal circuitry 28 is initially powered up. The key pad circuit 36 incorporates the user actuated keys 12 and provides circuitry in conjunction with the control circuit 30 for decoding which one of the user actuated keys 12 has been actuated.

The external data input circuit 38 receives data from a source external to the remote control 10. The particular circuitry can take the form of any one of many traditional forms of communication, whether wired or wireless. In one

preferred embodiment the external data communication is accomplished by a magnetic modem similar to the one described in the Escobosa application, USSN 08/251,336, filed May 31, 1994, referred to above.

5 The LED driver circuit 40 is coupled to the control circuit 30 and incorporates the visual LED 24 and the infra-red LED (not shown) located at the front 26 of the remote control 10 and provides the LEDs with driving power in response to signals received from the control circuit 30. The visual LED  
10 24 provides the user with visual feedback concerning the remote control's 10 activity. The infra-red LED provides the signalling capability for sending the remote control signals to the devices to be controlled.

FIGS. 3A, 3B, 3C and 3D are each portions of a flow chart  
15 that together provide instructions for assisting in the control of the remote control with particular emphasis on the steps that provide for the method of selecting a remote control command set from a group of multiple command sets stored in the remote control.

20 FIG. 3A shows the starting point of the instructions to be executed by the microprocessor 42 in controlling the remote control 10. The flow chart begins by waiting for an interrupt or an indication that a key or switch 12 has been pressed or actuated. Upon actuation of a key or switch 12, a  
25 determination is made as to which key has been pressed.

If a mode key 18 is pressed the remote control 10 sets the current command set from which commands will be transmitted to the command set chosen for the selected mode. The mode keys 18 preferably include separate mode keys 18 for a TV, a VCR, a  
30 Cable Box, as well as any other device for which an infra-red remote control transmitter could be used to remotely control the device.

If a command key is pressed, the remote control 10 transmits the particular operating command associated with the  
35 pressed command key from the currently selected command set.

If an enter setup key is pressed the remote control 10 enters a setup mode used to configure the remote control 10. In the preferred embodiment the enter setup key is equivalent to the magic key 20, however it can take any one of various

forms including a slider switch or a combination of key presses.

Upon entering the setup mode, the remote control 10 waits until it receives a set up code. If the setup code is a setup function code, the execution of operating instructions of the remote control 10 branches to FIG. 3B to perform instructions to determine which function code has been requested to be performed.

If the setup code is a criteria code, indicating a particular subset of command code sets, the remote control sets the searchable command sets to the command sets meeting the received criteria and branches the execution of instructions to FIG. 3C to perform instructions to select a new command set for the currently active mode.

The criteria code allows the remote control to restrict the number of searchable command sets to only those command sets used with devices meeting a particular criteria and/or to determine a different order of assigning the effects observable commands.

Preferably the effects observable commands will be assigned to the user actuated keys in order of decreasing popularity. However a command set that is not very popular when one considers the entire list of stored command sets used for operating a television, may be the most popular command set used for operating a television manufactured by a particular manufacturer. The use of a criteria code representing a particular manufacturer by the user can be used to establish a different assignment order based on the popularity of command sets following the indicated criteria.

Examples of different possible criteria include codes for different manufacturers, codes for equipment manufactured or purchased between a specified time period, devices sold through a particular retail outlet, etc.

Additionally in some embodiments it is possible to allow for the entry of multiple criteria in order to further isolate the proper command set for operating a particular device.

If the setup code is neither a function code nor a setup code, it is assumed the user inadvertently entered the setup mode and the execution of the operating instructions of the

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remote control 10 branches to the start of the instructions in FIG. 3A.

FIG. 3B shows the program steps performed when a function code is received after entering the setup mode. First a  
5 determination is made to identify which function is being requested to be executed. If the function code is determined to be a download code, the remote control executes a procedure to receive one or more command sets via the external data input. The searchable subset of command sets are defined to  
10 include the received command sets and the execution of the operating instructions branches to FIG. 3C.

Similarly, an alternative embodiment can allow the received command sets to supplement the command sets previously stored in the remote control 10.

15 In the embodiment disclosed in FIGS. 3A through 3D the remote control enters a command set selection procedure after downloading the received data, however it is not necessary for the selection procedure to be entered immediately after downloading of the received data, but can be delayed until the  
20 user chooses. Similarly, the data received does not necessarily have to be one or more command sets, but can include updates to already stored command sets or other related data.

If the function code is a search code, the searchable set  
25 of commands is defined to include the command sets stored in the remote control without first inputting a criteria code or downloading command sets. This allows the user to directly enter the procedure to select the new command set without first entering a criteria code or performing another function.

30 FIGS. 3C and 3D shows the program steps for selecting the new command set from the list of searchable command sets. Initially, as shown in FIG. 3C a determination is made whether the number of searchable command sets exceeds the number of assignable user actuated keys or switches.

35 If the number of searchable command sets is greater than the number of assignable user actuated keys or switches the searchable command sets are broken up into multiple pages of command sets no greater in size than the number of assignable user actuated keys that can be paged through using the channel

up and channel down keys 22. The effects observable commands from the currently selected page, initially the first page, of command sets is assigned to the assignable user actuated keys.

If the number of searchable command sets is equal to or  
5 less than the number of assignable user actuated keys or switches, the effects observable commands from the searchable command sets, forming a single page of command sets, are assigned to the assignable user actuated keys.

After the effects observable commands for the currently  
10 selected page have been assigned, the remote control 10 waits for a key to be pressed. When a key press has been detected the remote control 10 determines if the key pressed is an assignable user actuated key, a key which has had an effects observable command assigned to it. If it is then the remote  
15 control transmits the assigned effects observable command (e.g., a "power off" command) to the device to be remotely controlled and loops back to wait for another key press. The user observes the device to be remotely controlled for a visual indication of a compatible command.

20 In the preferred embodiment the assignable user actuated keys include the power key 14 and the numeric keys 16. The assignable user actuated keys are assigned in the order of the power key 14 first, followed by the numeric keys 16 in order starting with the "one" key and ending with the "zero" key.  
25 Additionally the preferred effects observable command is a power off command.

If the key pressed is a page down command (i.e. a channel down key 22), and a subsequent page of command sets is defined. Then the remote control 10 reassigns an effects observable  
30 command from each of the command sets from the subsequent page of command sets to the assignable user actuated keys and loops back to wait for another key press.

If the key pressed is a page up command (i.e. a channel up key 22), and a prior page of command sets is defined, then the  
35 remote control reassigns an effects observable command from each of the command sets from the prior page of command sets to the assignable user actuated keys and loops back to wait for another key press.

If the key pressed is an exit setup key (i.e. a magic key

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20), then the remote control 10 sets the current command set for the currently selected mode to the command set corresponding to the effects observable command assigned to the last pressed assigned key. Typically the user exits the setup  
5 procedure when the user observes the desired effect on the device to be controlled by the remote control 10, indicating that a compatible command set has been located.

In this way a method for selecting a compatible command set from a library of multiple command sets can be realized.  
10 Similarly different command sets can be selected for each of the different device modes by selecting the mode key 18 corresponding to the desired mode prior to entering the setup procedure.

Often times, a plurality of brands of electronic devices,  
15 e.g., television sets may share a device entry code. For example, the Panasonic code, 035, is also the entry code for a private labelled television set sold by Montgomery Wards. This is illustrated in FIG. 4.

Additionally, as shown in FIG. 4, the priority order may  
20 be different from brand name to brand name, even though they use the same device entry code. For example the Sony number 1 code is 033, but this device entry code is only the Wards number 2 code.

From the foregoing description, it will be apparent that  
25 the method for selecting a remote control command set from a group of multiple command sets stored in a remote control, for controlling various remotely controllable electronic devices of the present invention has a number of advantages, some of which have been described above and others of which are inherent in  
30 the method of the invention. Also it will be understood that modifications can be made to the method for selecting a remote control command set described above without departing from the teachings of the invention.

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## CLAIMS

## I Claim:

1. A method for selecting an appropriate one of a plurality of command sets stored in a remote control having a plurality of assignable user actuated switches or keys for controlling a remotely controllable electronic device, comprising the steps of:
  - (a) assigning an effects observable command from each of said plurality of command sets to one of said plurality of assignable user actuated switches or keys, each assigned, effects observable command to be transmitted when the corresponding one of the assignable user actuated switches or keys is actuated;
  - (b) actuating sequentially and individually each one of the plurality of assignable user actuated switches or keys, to individually transmit each assigned effects observable command until the proper effect is observed;
  - (c) halting the actuating of the plurality of assignable user actuated switches or keys; and
  - (d) setting the remote control to transmit future remote control commands from the command set containing the last transmitted effects observable command.
2. The method of claim 1, further comprising the step of receiving the plurality of command sets from an external source prior to the step of assigning an effects observable command.
3. The method of claim 2, wherein said external source communicates with the remote control via a wireless signal transmission.
4. The method of claim 2, wherein said external source communicates with the remote control via a wired signal transmission.
5. The method of claim 2, wherein said external source communicates with the remote control via a magnetic modem coupled to a telephone handset.
6. The method of claim 1, further comprising the step of receiving a code input from the user and wherein said code input is used to identify a subset of command sets meeting a particular criteria, from which said effects observable commands are assigned from.

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7. The method of claim 6, wherein said particular criteria refer to command sets which control electronic devices manufactured by a specific manufacturer.

8. The method of claim 6, wherein said particular  
5 criteria refer to command sets which control electronic devices manufactured within a specific time period.

9. The method of claim 6, wherein said particular criteria refer to command sets which control electronic devices sold through a particular retail outlet.

10 10. The method of claim 1, wherein said effects observable command is a power off command.

11. The method of claim 1, wherein said plurality of assignable user actuated switches or keys include a power key and numeric keys.

15 12. The method of claim 1, wherein said remote control further includes a plurality of user actuated mode keys for selecting one of a plurality of modes and said method further includes the step of selecting one of the plurality of modes prior to the step of assigning an effects observable command,  
20 such that, the method for selecting an appropriate one of a plurality of command sets can be performed to separately set a different command set for each mode.

13. The method of claim 1, wherein said remote control further includes a page down user actuated key and a page up  
25 user actuated key and, when the number of command sets exceed the number of assignable user actuated switches or keys, said method further includes the steps of: assigning an effects observable command from each of said plurality of command sets in a subsequent group of command sets to one of said plurality  
30 of assignable user actuated switches or keys, when a page down user actuated key is actuated; and assigning an effects observable command from each of said plurality of command sets in a prior group of command sets to one of said plurality of assignable user actuated switches or keys, when a page up user  
35 actuated key is actuated.

14. The method of claim 1, wherein the order of said effects observable commands from said plurality of command sets is assigned to said plurality of assignable user actuated switches or keys based upon decreasing popularity of usage of

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each of said command sets.

15 15. The method of claim 14, further comprising the step of receiving a code input from the user and wherein said code input indicates a particular criteria and is used to further determine the order said effects observable commands are assigned to said plurality of assignable user actuated switches or keys based upon decreasing popularity of usage of each of said command sets conforming to said criteria.

10 16. An apparatus for selecting an appropriate one of a plurality of command sets stored in a remote control having a plurality of assignable user actuated switches or keys for controlling a remotely controllable electronic device, comprising:

15 means for assigning an effects observable command from each of the plurality of command sets to one of said plurality of assignable user actuated switches or keys;

means for transmitting said effects observable command when the corresponding one of said plurality of assignable user actuated switches or keys is actuated;

20 means for indicating the halting of the actuation of the plurality of assignable user actuated switches or keys; and

means for setting the remote control to transmit future remote control commands from the command set containing the last transmitted effects observable command.

16

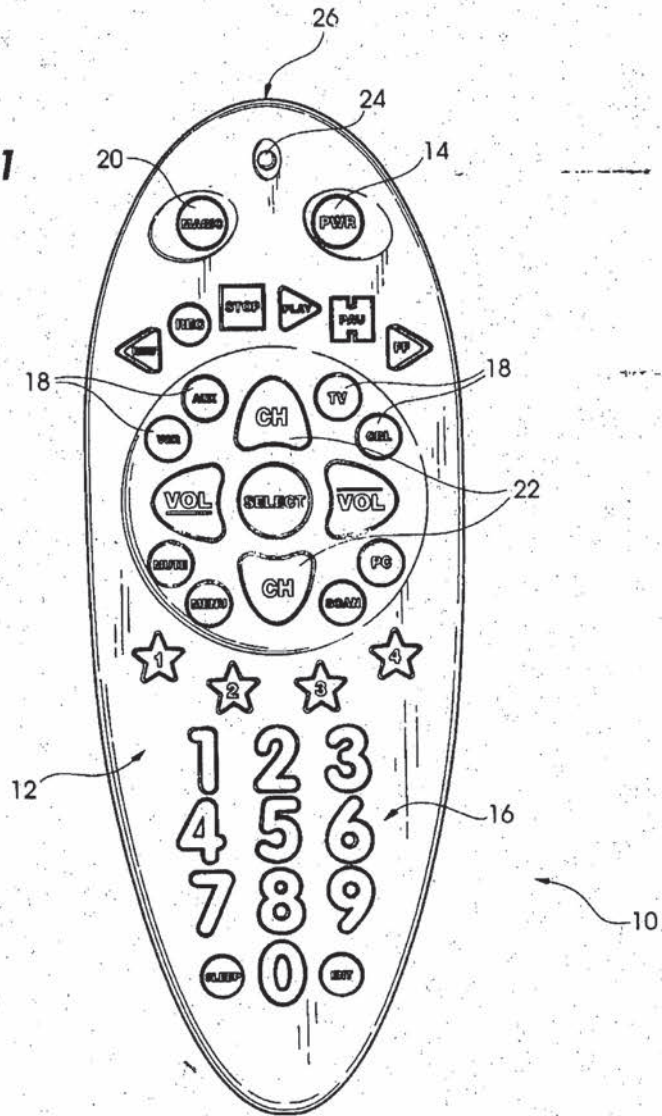
636664

**ABSTRACT OF THE DISCLOSURE**

A method for selecting a command set from a group of command sets stored in the remote control. Each remote control command set includes a set of commands for operating at least one of various remotely controllable devices. A command, whose effect is observable in the remotely controlled device is assigned to one of the user actuated keys. The keys are pressed one by one until the user observes the desired effect on the remotely controlled device. The user then signals the remote control to exit the select procedure with the remote control setting the remote control to transmit future commands from the command set including the last transmitted effects observable command having the observed desired effect.

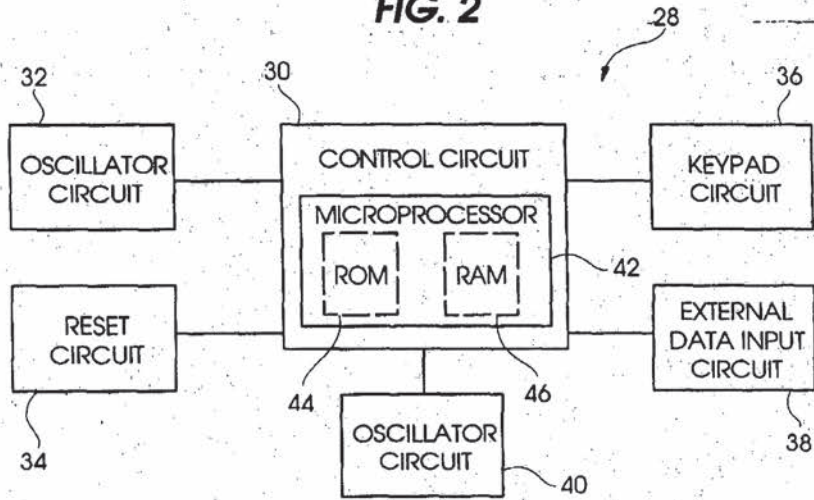
1/6

FIG. 1



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FIG. 2



3/6

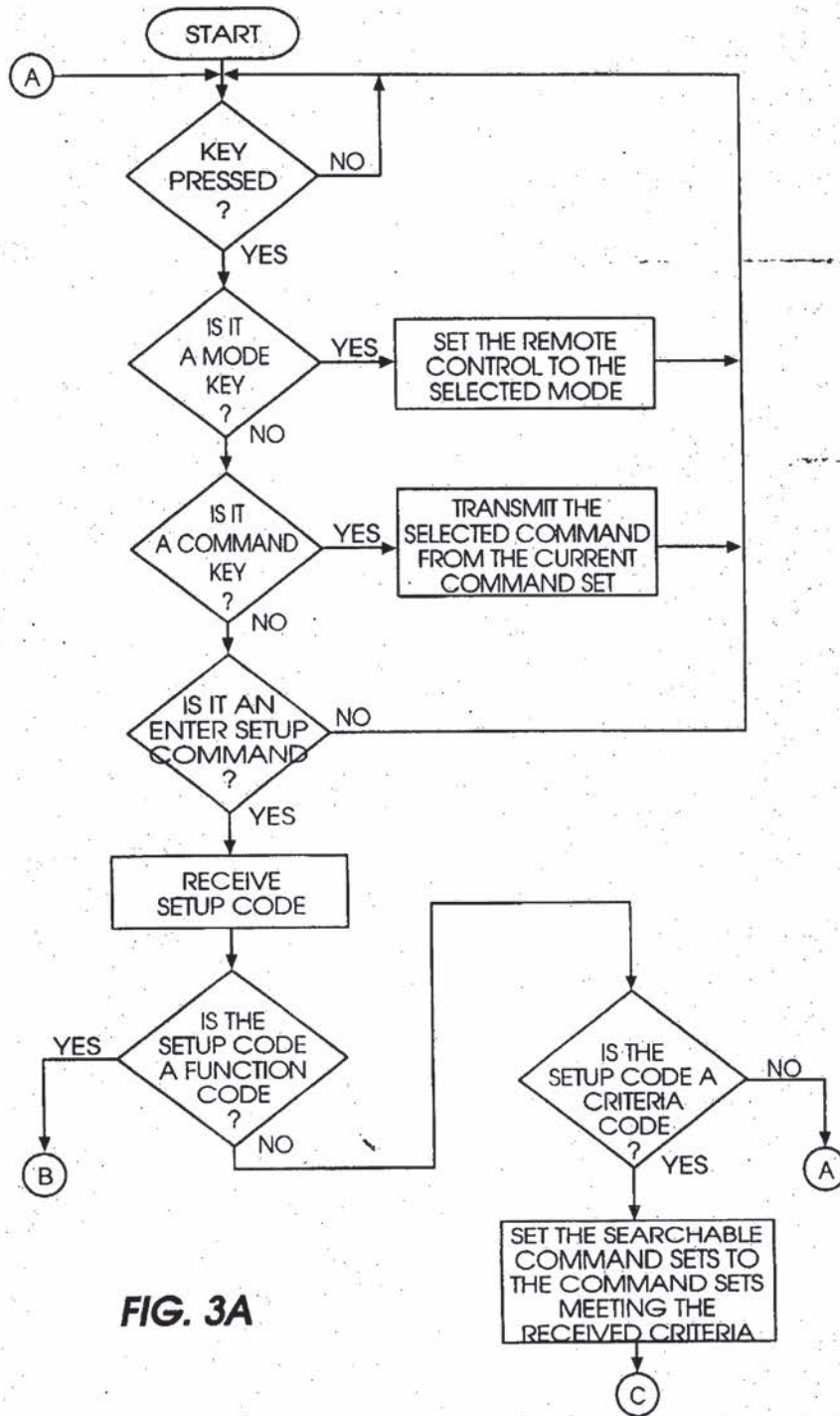


FIG. 3A

4/6

FIG. 3B

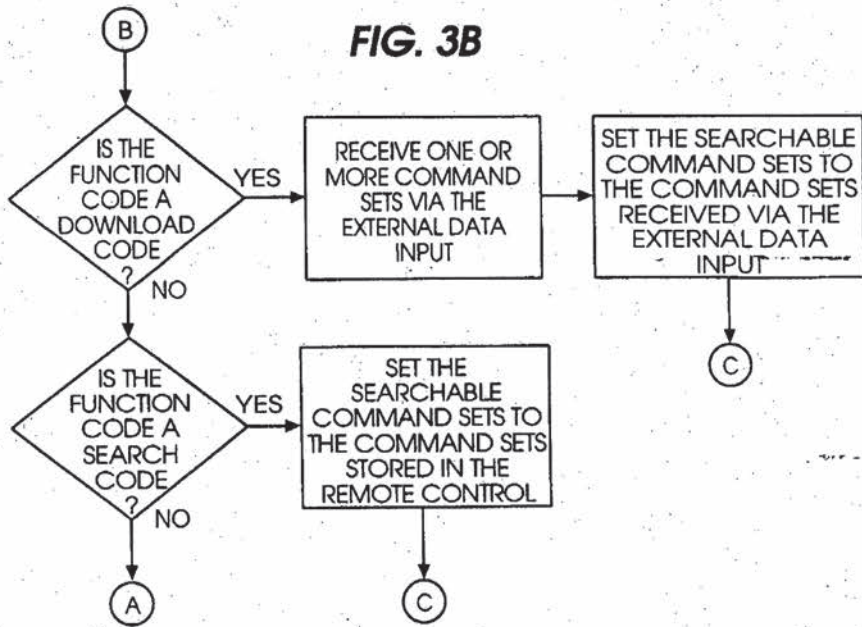
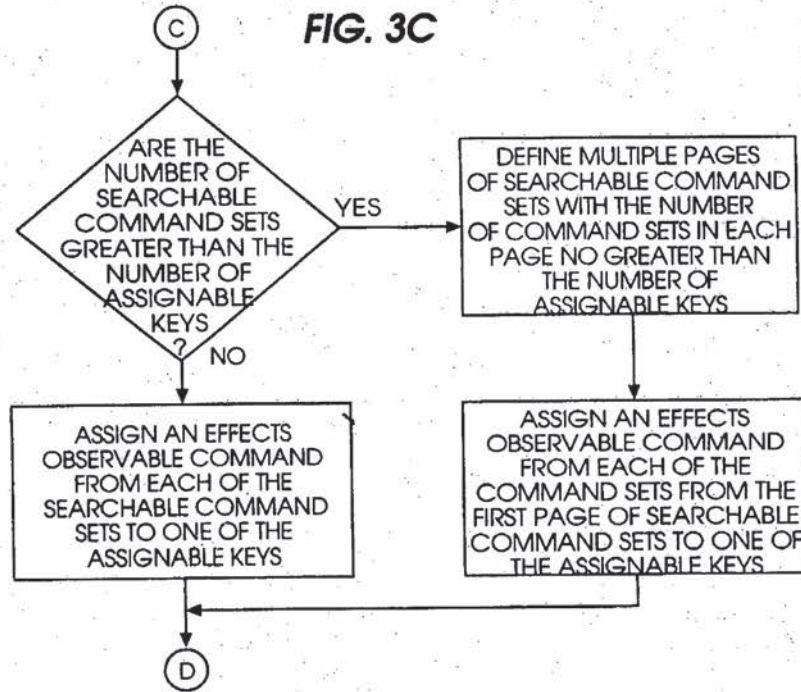


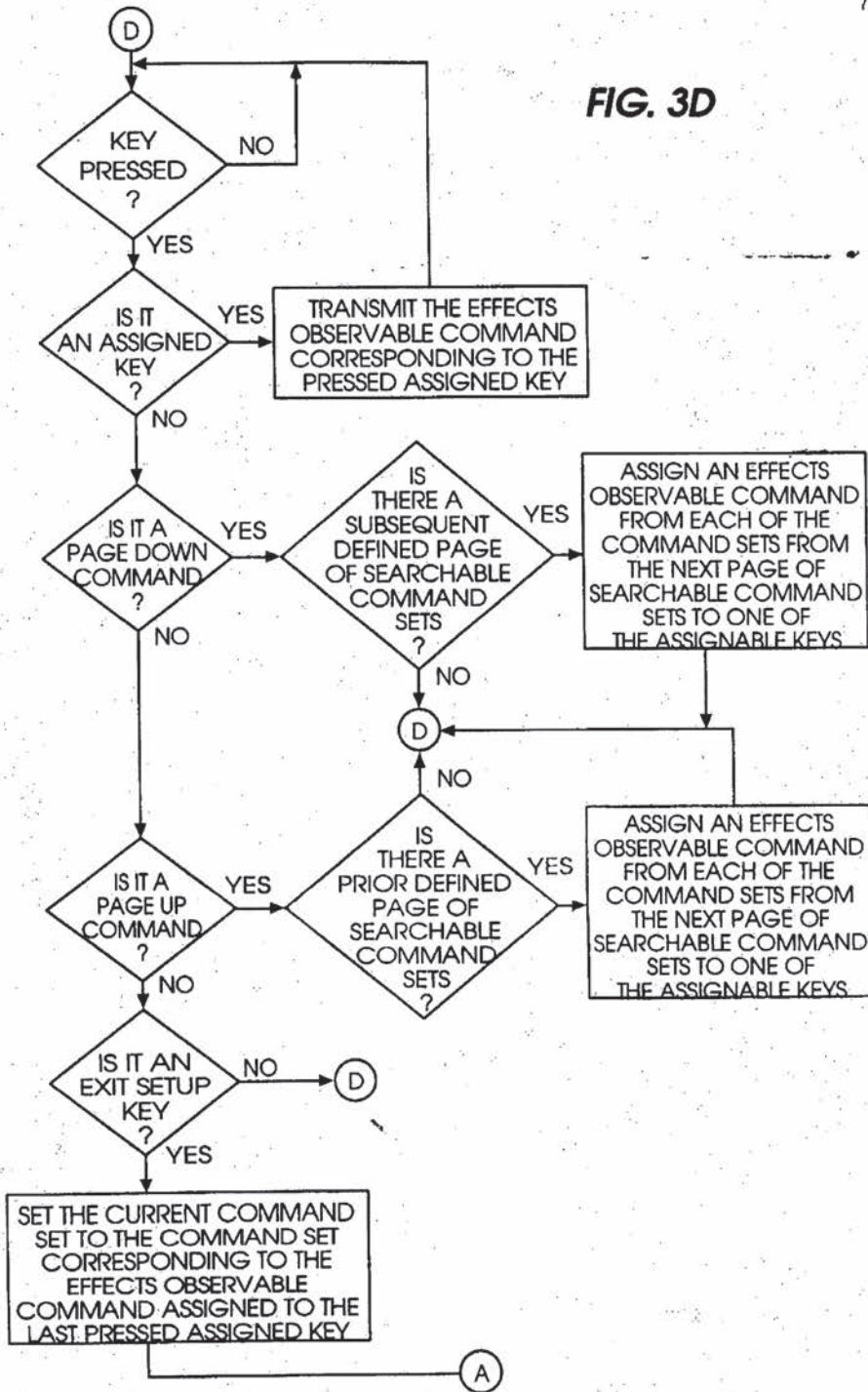
FIG. 3C



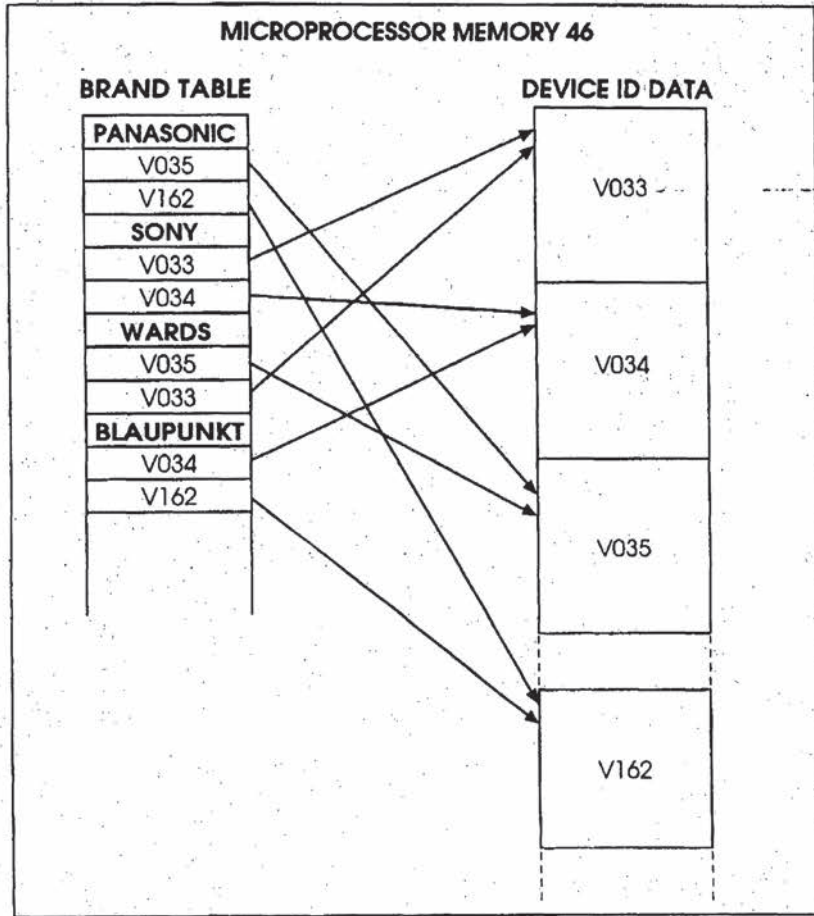


5/6

FIG. 3D



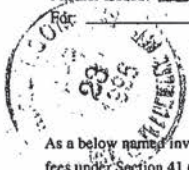
4/6



**FIG. 4**

Applicant or Patentee: PATRICK H. HAYES & KIMTHOA T. NGUYEN Attorney's  
Serial or Patent No.: \_\_\_\_\_ Docket No.: 96030

Filed or Issued: \_\_\_\_\_  
For: METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET



VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY  
STATUS (37 CFR 1.9 (f) and 1.27 (b)) INDEPENDENT INVENTOR

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined in 37 CFR 1.9 (c) for purposes of paying reduced fees under Section 41 (a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled:

METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET

- the specification filed herewith
- application serial no. \_\_\_\_\_, filed \_\_\_\_\_
- patent no. \_\_\_\_\_, issued \_\_\_\_\_

I have not assigned, granted, conveyed or licensed and am under no obligation under contract or law to assign, grant, convey or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR 1.9 (c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR 1.9 (d) or a nonprofit organization under 37 CFR 1.9 (e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- no such person, concern or organization
- persons, concerns or organizations listed below\*

\*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27).

FULL NAME UNIVERSAL ELECTRONICS INC.  
ADDRESS 1864 Enterprise Parkway, Twinsburg, Ohio 44087  
 INDIVIDUAL  SMALL BUSINESS CONCERN  NONPROFIT ORGANIZATION

FULL NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
 INDIVIDUAL  SMALL BUSINESS CONCERN  NONPROFIT ORGANIZATION

FULL NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
 INDIVIDUAL  SMALL BUSINESS CONCERN  NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28 (b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Patrick H. Hayes Kimthoa T. Nguyen  
NAME OF INVENTOR NAME OF INVENTOR NAME OF INVENTOR

[Signature] [Signature]  
Signature of Inventor Signature of Inventor Signature of Inventor

4/22/96 4/22/96  
Date Date Date

Applicant or Patentee: PATRICK H. HAYES & KIMTHOA T. NGUYEN Attorney's Docket No.: 96030  
Serial or Patent No.: \_\_\_\_\_  
Filed of Issued: \_\_\_\_\_  
For: METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS (37 CFR 1.9 (f) and 1.27 (e)) SMALL BUSINESS CONCERN

I hereby declare that I am

- the owner of the small business concern identified below;  
 an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF CONCERN Universal Electronics Inc.  
ADDRESS OF CONCERN 1864 Enterprise Parkway  
Twinsburg, OH 44087

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9 (d), for purposes of paying reduced fees under Section 1(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET

Patrick H. Hayes and Kimthoa T. Nguyen (by inventor(s))  
described in

- the specification filed herewith  
 application serial no. \_\_\_\_\_, filed \_\_\_\_\_  
 patent no. \_\_\_\_\_, issued \_\_\_\_\_

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below\* and no rights to the invention are held by any person, other than the inventor, who could not qualify as a small business concern under 37 CFR 1.9 (d) or by any concern which would not qualify as a small business concern under 37 CFR 1.9 (d) or a nonprofit organization under 37 CFR 1.9 (e).

\*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27).

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
 INDIVIDUAL  SMALL BUSINESS CONCERN  NONPROFIT ORGANIZATION

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
 INDIVIDUAL  SMALL BUSINESS CONCERN  NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28 (b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING David Gabrielson  
TITLE OF PERSON OTHER THAN OWNER President  
ADDRESS OF PERSON SIGNING 1864 Enterprise Parkway  
Twinsburg, OH 44087

SIGNATURE  DATE 4-18-96

**COMBINED DECLARATION FOR PATENT APPLICATION AND POWER OF ATTORNEY**

(Includes Reference to PCT International Applications)

ATTORNEY DOCKET NUMBER

96030

As a below named inventor, I hereby declare that:  
 My residence, post office address and citizenship are as stated below next to my name,  
 I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET

the specification of which (check only one item below):

is attached hereto.

was filed as United States application

Serial No. \_\_\_\_\_

on \_\_\_\_\_

and was amended

on \_\_\_\_\_ (if applicable)

was filed as PCT international application

Number \_\_\_\_\_

on \_\_\_\_\_

and was amended under PCT Article 19

on \_\_\_\_\_ (if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby authorize the U.S. attorney or agent named herein to accept and follow instructions from \_\_\_\_\_

as to any action taken in the Patent and Trademark Office regarding this application without direct communication between the U.S. attorney or agent and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorney or agent named herein will be so notified by the undersigned.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

**PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119**

COUNTRY (if PCT, indicate "PCT")	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED UNDER 35 USC 119	
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO
			<input type="checkbox"/> YES	<input type="checkbox"/> NO

PTO 1301

Page 1 of 2

U.S. DEPARTMENT OF COMMERCE - Patent and Trademark

<b>Combined Declaration For Patent Application and Power of Attorney (Continued)</b> <small>(Includes Reference to PCT International Applications)</small>			ATTORNEY DOCKET NUMBER <b>96030</b>		
I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:					
<b>PRIOR U.S. APPLICATIONS OR PCT INTERNATIONAL APPLICATIONS DESIGNATING THE U.S. BENEFIT UNDER 35 U.S.C. 120</b>					
U.S. APPLICATIONS				STATUS <i>(Check one)</i>	
U.S. APPLICATION NUMBER	U.S. FILING DATE	PATENTED	PENDING	ABANDONED	
PCT APPLICATIONS DESIGNATING THE U.S.					
PCT APPLICATION NUMBER	PCT FILING DATE	U.S. SERIAL NUMBERS ASSIGNED (if any)			
POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)					
Thomas R. Vigil, Reg. No. 24,542 James P. Hanrath, Reg. No. 31,965 <del>Lawrence J. Ghapa, Reg. No. 30,186</del>					
Send Correspondence to:				Direct Telephone Calls to: <i>(name and telephone number)</i>	
Thomas R. Vigil 836 South Northwest Highway Barrington, Illinois 80010				Thomas R. Vigil (708) 382-6500	
100 RI	FULL NAME OF INVENTOR	FAMILY NAME <b>HAYES</b>	FIRST GIVEN NAME <b>PATRICK</b>	SECOND GIVEN NAME <b>H.</b>	
	RESIDENCE & CITIZENSHIP	CITY <b>Mission Viejo</b>	STATE OR FOREIGN COUNTRY <b>California</b> CA	COUNTRY OF CITIZENSHIP <b>U.S.A.</b>	
	POST OFFICE ADDRESS	POST OFFICE ADDRESS <b>26451 Avenida Deseo</b>	CITY <b>Mission Viejo</b>	STATE & ZIP CODE/COUNTRY <b>California 92691</b>	
100 RI	FULL NAME OF INVENTOR	FAMILY NAME <b>NGUYEN</b>	FIRST GIVEN NAME <b>KIMHUA</b>	SECOND GIVEN NAME <b>T.</b>	
	RESIDENCE & CITIZENSHIP	CITY <b>Yorba Linda</b>	STATE OR FOREIGN COUNTRY <b>California</b> CA	COUNTRY OF CITIZENSHIP <b>U.S.A.</b>	
	POST OFFICE ADDRESS	POST OFFICE ADDRESS <b>5671 Lynnbrook Plaza</b>	CITY <b>Yorba Linda</b>	STATE & ZIP CODE/COUNTRY <b>California 92686</b>	
100 RI	FULL NAME OF INVENTOR	FAMILY NAME	FIRST GIVEN NAME	SECOND GIVEN NAME	
	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP	
	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY	
I hereby declare under penalty of perjury under the laws of the United States of America that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine and imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.					
SIGNATURE OF INVENTOR 201		SIGNATURE OF INVENTOR 202		SIGNATURE OF INVENTOR 203	
DATE	<b>4/22/96</b>	DATE	<b>4/22/96</b>	DATE	



*CP/128 1*

*GP2617  
#3/Assoc.  
P/A*

PATENT  
USSN 08/636,666  
Atty Docket 96030

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
PATRICK H. HAYES and KIMTHOA T. NGUYEN	)	Group Art Unit:
For: METHOD FOR SELECTING A RMEOTE	)	2617
CONTROL COMMAND SET	)	
Serial No. 08/636,666	)	Examiner:
Filed: April 23, 1996	)	Unknown

ASSOCIATE POWER OF ATTORNEY (37 CFR 1.34)

TO:  
Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

Please recognize as Associate Attorney(s) in this application, with full power to prosecute and transact all business in the United States Patent and Trademark Office connected therewith:

- Robert E. Browne, Reg. No. 26,150
- Mark R. Galis, Reg. No. 36,805
- Gary R. Jarosik, Reg. No. 35,906

Please send all future correspondence, including the Letters Patent when issued, to, and direct all future communications to:

Mark Galis, Reg. No. 36,805  
 c/o ALTHEIMER & GRAY  
 10 South Wacker Drive, Suite 3700  
 Chicago, Illinois 60606  
 Telephone: 1-312-715-4000  
 Facsimile: 1-312-715-4800

VIGIL & HANRATH

By: *Thomas R. Vigil*  
Thomas R. Vigil  
Reg. No. 24,542

Dated: September 5, 1996

VIGIL & HANRATH  
 836 South Northwest Highway  
 Barrington, Illinois 60010  
 Telephone: (847) 382-6500  
 Facsimile: (847) 382-6895



UNITED STATES DEPARTMENT OF COMMERCE  
 Patent and Trademark Office  
 Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
 Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
---------------	-------------	-----------------------	---------------------

08/636,666 04/23/96 HAYES

P 96030

EXAMINER  
HILL, A

E6M1/1002

THOMAS R VIGIL  
 836 SOUTH NORTHWEST HIGHWAY  
 BARRINGTON IL 60010

PART UNIT	PAPER NUMBER
-----------	--------------

2617

2

DATE MAILED: 10/02/96

**NOTICE OF ALLOWABILITY**

**PART I.**

1.  This communication is responsive to application filed 4/23/96
2.  All the claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice Of Allowance And Issue Fee Due or other appropriate communication will be sent in due course.
3.  The allowed claims are 1-16
4.  The drawings filed on \_\_\_\_\_ are acceptable.
5.  Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has [-] been received, [-] not been received, [-] been filed in parent application Serial No. \_\_\_\_\_, filed on \_\_\_\_\_
6.  Note the attached Examiner's Amendment.
7.  Note the attached Examiner Interview Summary Record, PTOL-413.
8.  Note the attached Examiner's Statement of Reasons for Allowance.
9.  Note the attached NOTICE OF REFERENCES CITED, PTO-892.
10.  Note the attached INFORMATION DISCLOSURE CITATION, PTO-1449.

**PART II.**

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" indicated on this form. Failure to timely comply will result in the ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

1.  Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
2.  APPLICANT MUST MAKE THE DRAWING CHANGES INDICATED BELOW IN THE MANNER SET FORTH ON THE REVERSE SIDE OF THIS PAPER.
  - a.  Drawing informalties are indicated on the NOTICE RE PATENT DRAWINGS, PTO-948, attached hereto ~~or to Paper No.~~ CORRECTION IS REQUIRED.
  - b.  The proposed drawing correction filed on \_\_\_\_\_ has been approved by the examiner. CORRECTION IS REQUIRED.
  - c.  Approved drawing corrections are described by the examiner in the attached EXAMINER'S AMENDMENT. CORRECTION IS REQUIRED.
  - d.  Formal drawings are now REQUIRED.

Any response to this letter should include in the upper right hand corner, the following information from the NOTICE OF ALLOWANCE AND ISSUE FEE DUE: ISSUE BATCH NUMBER, DATE OF THE NOTICE OF ALLOWANCE, AND SERIAL NUMBER.

**Attachments:**

- Examiner's Amendment
- Examiner Interview Summary Record, PTOL-413
- Reasons for Allowance
- Notice of References Cited, PTO-892
- Information Disclosure Citation, PTO-1449

- Notice of Informal Application, PTO-152
- Notice re Patent Drawings, PTO-848 (i.e. Substitute PTO-948)
- Listing of Bonded Draftsmen
- Other

*Note: Page 7, line 16 of the specification has been updated to include the patent number (i.e. "5,537,463") of the referenced application.*

ah

PTOL-37 (REV. 4-89) \*



Serial Number: 08/636,666

-2-

Art Unit: 2617

**Part III REASONS FOR ALLOWANCE**

*Prior Art Citation*

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Reitmeier (US 4,746,919) discloses a remote controller with key function display provisions.

Sasaki et al. (US 4,825,209) discloses a remote controller with changeable function display.

Amano et al. (US 4,999,622) discloses a programmable remote controller.

Tanaka et al. (US 5,420,573) discloses an audio-visual system in which a single function key is used to control multiple devices.

Zirkl et al. (US 5,453,738) discloses a remote control system with a programmable function table for controlling one or more devices with a single key.

Rumbolt et al. (US 4,703,359), Darbee et al. (US 4,959,810), Takiguchi et al. (US 5,485,149) and Escobosa et al. (US 5,537,463) disclose programmable remote control devices and are notably discussed in Applicant's specification.

Serial Number: 08/636,666

-3-

Art Unit: 2617

**Reasons for Allowance**

2. The following is an Examiner's Statement of Reasons for Allowance:

The prior art does not teach or fairly suggest the novel remote control features set forth in claims 1-16, whereby to program a remote control in a search mode, each key of a plurality of assignable keys is assigned an observable command from corresponding to each of a plurality of command sets. As noted by Applicants in the specification, this avoids erroneous operation often encountered in prior art devices where the same single key is repeatedly pressed to sequentially advance through the plurality of remote control command sets being searched and accidental operation of said same key resulted in error. The instant invention novelly avoids such erroneous operation by assigning separate keys to search through the separate command sets, each key corresponding to a different set.

Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably **accompany** the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Serial Number: 08/636,666

-4-

Art Unit: 2617

**Contact Information**

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Hill whose telephone number is (703) 305-8967.

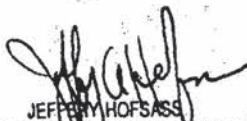
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Examiner Hofsass, can be reached at (703) 305-4717. The fax phone number for this Art Unit is (703) 305-3988.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-8576.



ANDREW M. HILL  
PATENT EXAMINER  
GROUP 2600

A.H.  
September 30, 1996



JEFFERY HOFSSASS  
SUPERVISORY PATENT EXAMINER  
GROUP 2600

TO SEPARATE, HOLD TOP AND BOTTOM EDGES, SNAP-APART AND DISCARD CARBON

FORM PTO-892 (REV. 2-82)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		SERIAL NO. 08/636,666	GROUP/ART UNIT 2617	ATTACHMENT TO PAPER NUMBER 2	
NOTICE OF REFERENCES CITED				APPLICANT(S) Hayes et al.			
U.S. PATENT DOCUMENTS							
*	DOCUMENT NO.	DATE	NAME	CLASS	SUB-CLASS	FILING DATE IF APPROPRIATE	
A	4703359	10/1987	Rumbolt et al.	340	825.69		
B	4746919	5/1988	Reitmeier	340	825.72		
C	4825209	4/1989	Sasaki et al.	340	825.37		
D	4959810	9/1990	Darbee et al.	340	825.69		
E	4999622	3/1991	Amano et al.	341	176		
F	5420573	5/1995	Tanaka et al.	341	176	8-31-94	
G	5453738	9/1995	Zirkel et al.	340	825.72	9-18-91	
H	5485149	1/1996	Takiguchi et al.	359	148	6-9-93	
I	5537463	7/1996	Escobosa et al.	379	102	5-31-94	
J							
K							
FOREIGN PATENT DOCUMENTS							
*	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUB-CLASS	PERTINENT SHTS. PP. DWG. SPEC.
L							
M							
N							
O							
P							
Q							
OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)							
R							
S							
T							
U							
EXAMINER	A. Hill		DATE	9/30/96			
* A copy of this reference is not being furnished with this office action. (See Manual of Patent Examining Procedure, section 707.05 (a).)							

File  
copy

08/636,666

Attachment to  
Paper No. 2

**The drawings submitted with this application were declared informal by the applicant. Accordingly they have not been reviewed by a draftsman at this time. When formal drawings are submitted, the draftsman will perform a review.**

**Direct any inquires concerning drawing review to the Drawing Review Branch (703) 305-8404.**



**UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office**

Address: Box ISSUE FEE  
ASSISTANT COMMISSIONER FOR PATENTS  
Washington, D.C. 20231

**NOTICE OF ALLOWANCE AND ISSUE FEE DUE**

THOMAS R VIGIL  
836 SOUTH NORTHWEST HIGHWAY  
BARRINGTON IL 60010

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/636,666	04/23/96	01	HILL, A	3617 10/02/96
First Named Applicant	HAYES, PATRICK H.			

TITLE OF INVENTION METHOD FOR SELECTING A REMOTE CONTROL COMMAND

ATTYS DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
2 96030	341-176.0000	F12	UTILITY	NO	\$545.00	01/02/97

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED.**

**THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.**

**HOW TO RESPOND TO THIS NOTICE:**

- I. Review the SMALL ENTITY status shown above. If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:
  - A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
  - B. If the status is the same, pay the FEE DUE shown above.
- II. Part B of this notice should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "6b" of Part B should be completed.
- III. All communications regarding this application must give application number and batch number. Please direct all communication prior to issuance to Box ISSUE FEE unless advised to the contrary.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

**IMPORTANT REMINDER: Patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

242-645

PART B—ISSUE FEE TRANSMITTAL

MAILING INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE. Blocks 2 through 8 should be completed where appropriate. All further correspondence including the Issue Fee Receipt, the Patent, advance orders and notification of maintenance fees will be mailed to addressee entered in Block 1 unless you direct otherwise, by: (a) specifying a new correspondence address in Block 3 below; or (b) providing the PTO with a separate "FEE ADDRESS" for maintenance fee notifications with the payment of Issue Fee or thereafter. See reverse for Certificate of Mailing, below.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending on the needs of the individual case. Any comments on the amount of time required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, D.C. 20231.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Issue Fee, Assistant Commissioner for Patents, Washington D.C. 20231

1. CORRESPONDENCE ADDRESS  
THOMAS R. VIGIL  
636 SOUTH NORTHWEST HIGHWAY  
BARRINGTON IL 60010  
THOMAS R. VIGIL

2. INVENTOR(S) ADDRESS CHANGE (Complete only if there is a change)  
INVENTOR'S NAME  
Street Address  
City, State and ZIP Code  
CO-INVENTOR'S NAME  
Street Address  
City, State and ZIP Code  
DEC 06 1996  
DT  
 Check if additional changes are enclosed

Table with 5 columns: APPLICATION NO., FILING DATE, TOTAL CLAIMS, EXAMINER AND GROUP ART UNIT, DATE MAILED. Row 1: 08/636,666, 04/23/96, 016, HILL, A, 2617, 10/02/96. Below: First Named Applicant HAYES, PATRICK H.

TITLE OF INVENTION: METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET

Table with 7 columns: ATTY'S DOCKET NO., CLASS-SUBCLASS, BATCH NO., APPLN. TYPE, SMALL ENTITY, FEE DUE, DATE DUE. Row 1: 2, 96030, 341-176.000, F12, UTILITY, YES, \$645.00, 01/02/97

3. Correspondence address change (Complete only if there is a change)  
Mark R. Galis, Esq.  
Altheimer & Gray  
10 South Wacker Dr.  
Suite 4000  
Chicago, IL 60606

4. For printing on the patent front page, list the names of not more than 3 registered patent attorneys or agents OR, alternatively, the name of a firm having as a member a registered attorney or agent. If no name is listed, no name will be printed.  
1. Thomas R. Vigil  
2. Gary Jarosik  
3. Mark R. Galis  
820 TL 01 1156 12/19/96 0863666

5. ASSIGNMENT DATA TO BE PRINTED ON THE PATENT (print or type)  
(1) NAME OF ASSIGNEE: Universal Electronics Inc.  
(2) ADDRESS (CITY & STATE OR COUNTRY): Twinsburg, Ohio

6. The following fees are enclosed:  
Issue Fee  Advance Order - # of Copies 30,000  
The following fees should be charged to:  
DEPOSIT ACCOUNT NUMBER 011156  
Issue Fee  Advance Order - # of Copies 10  
Any Deficiencies in Enclosed Fees

A  This application is NOT assigned.  
 Assignment previously submitted to the Patent and Trademark Office.  
 Assignment is being submitted under separate cover. Assignments should be directed to Box ASSIGNMENTS.  
PLEASE NOTE: Unless an assignee is identified in Block 5, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the PTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

The COMMISSIONER OF PATENTS AND TRADEMARKS is requested to apply the Issue Fee to the application identified above.  
(Authorized Signature) Mark R. Galis (Reg. No. 29,895) (Date) 12/2/96  
NOTE: The Issue Fee will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the Patent and Trademark Office.

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Note: If this certificate of mailing is used, it can only be used to transmit the Issue Fee. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Box ISSUE FEE, Assistant Commissioner for Patents, Washington, D.C. 20231

B10 RI 12/19/96 0063666  
1 242 645.00 CK

on: December 3, 1996 (Date)  
Mark R. Galis (Name of person making deposit)  
Mark R. Galis (Signature)  
12/3/96 (Date)

1. TRANSMIT THIS FORM WITH FEE



#4 11/26/96  
B

IN THE PATENT AND TRADEMARK OFFICE

re application of: )  
 HAYES et al. ) Examiner: HILL  
 Filed: 04/23/96 ) Group Art Unit: 2617  
 Serial No.: 08/636,666 )

Title: METHOD FOR SELECTING A REMOTE CONTROL COMMAND SET

SUBMISSION OF FORMAL DRAWINGS

Assistant Commissioner of Patents  
Washington, D.C. 20231

Dear Sir:

In accordance with 37 C.F.R. § 1.85(c), the Applicants submit herewith corrected, formal drawings for the above-identified patent application. These drawings are being submitted within three (3) months of the mailing of the Notice of Allowability on October 2, 1996. While it is not believed that any additional fees are required, the Commissioner is authorized to charge our Deposit Account No. 011,156 for any fee deficiencies.

Respectfully submitted,

By: Mark R. Galis  
 Mark R. Galis (36,805)  
 Altheimer & Gray  
 10 S. Wacker Drive  
 Chicago, IL 60606-7482  
 (312) 715-4773

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail with sufficient postage addressed to: Assistant Commissioner of Patents, Washington, D.C. 20231 on 11/26/96.

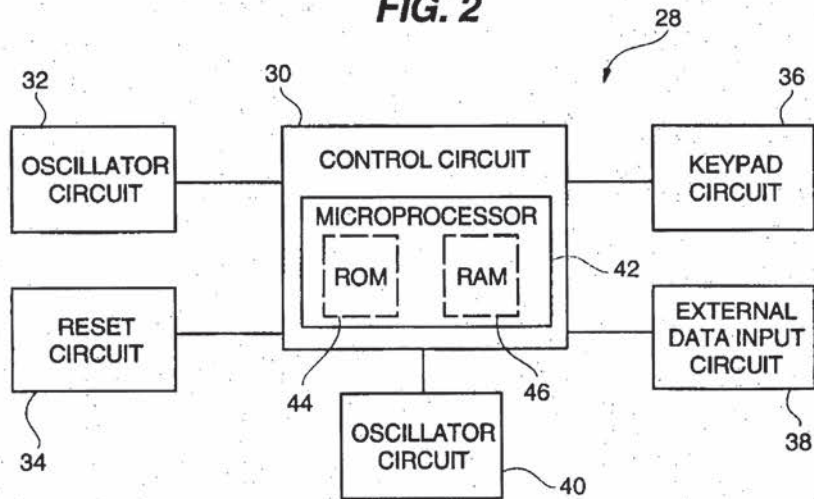
Mark R. Galis \_\_\_\_\_  
 Mark R. Galis Date



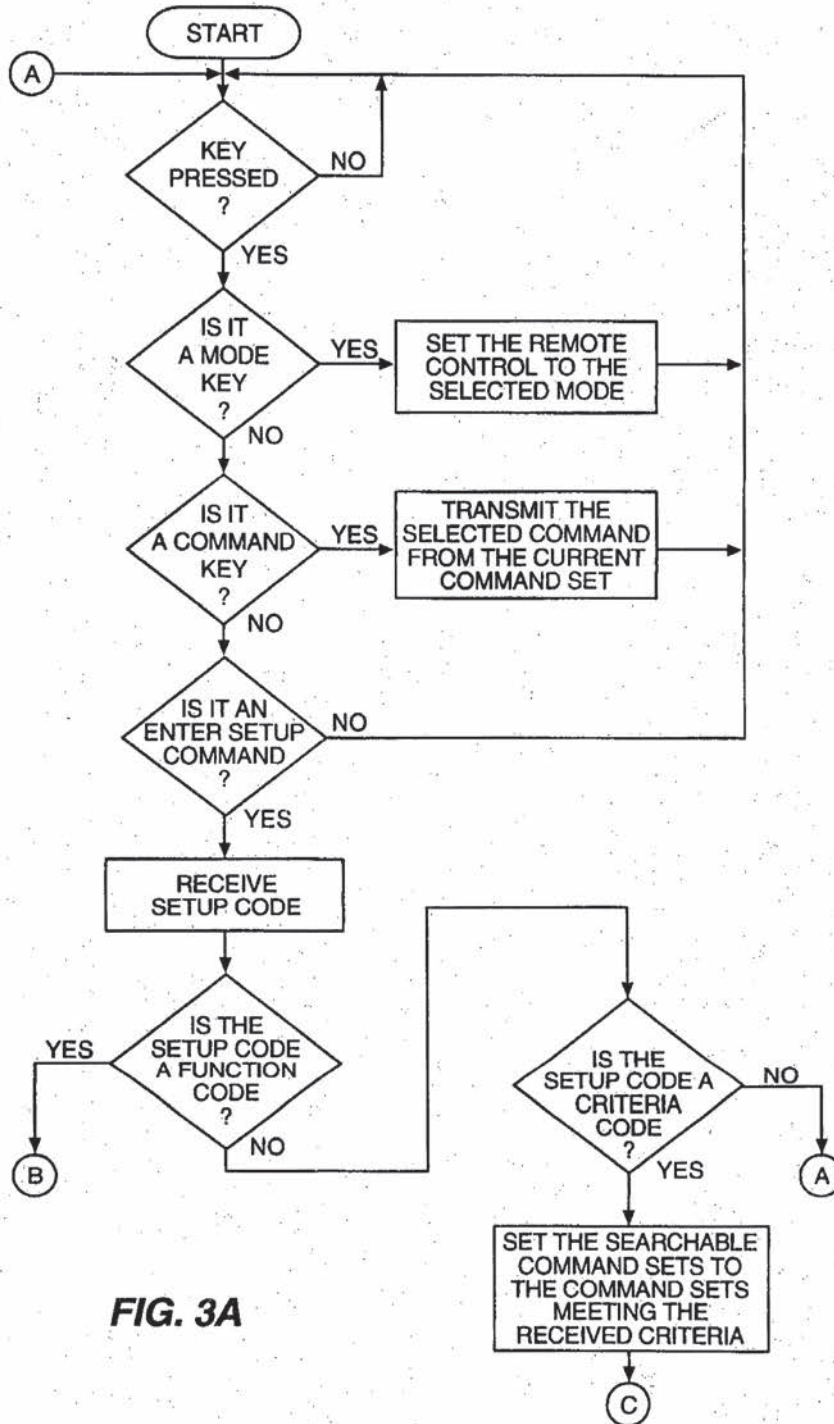


AFFECTED BY FIG. 1  
CLASS SUBCLASS  
C7  
DRAFTING

**FIG. 2**



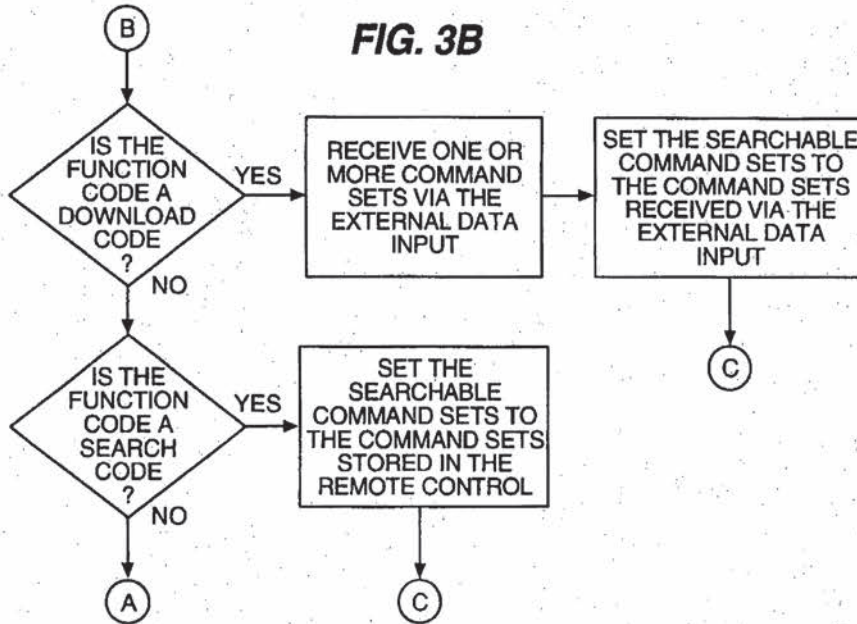
APPROVED	D.B. FIG.
BY	CLASS
DRAFTSMAN	SUBCLASS



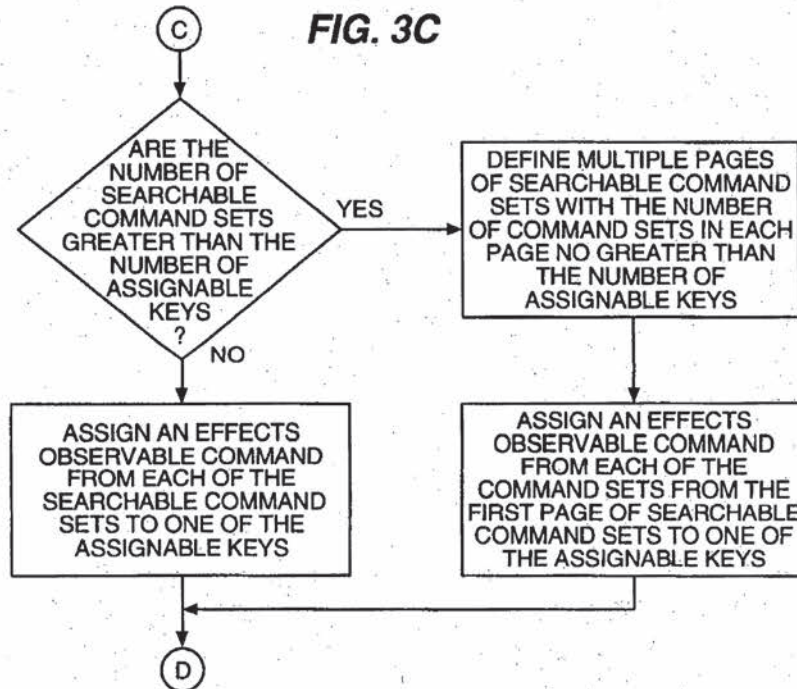
**FIG. 3A**

APPROVED	D.B. FIG.
BY	CLASS / SUBCLASS
DRAFTSMAN	

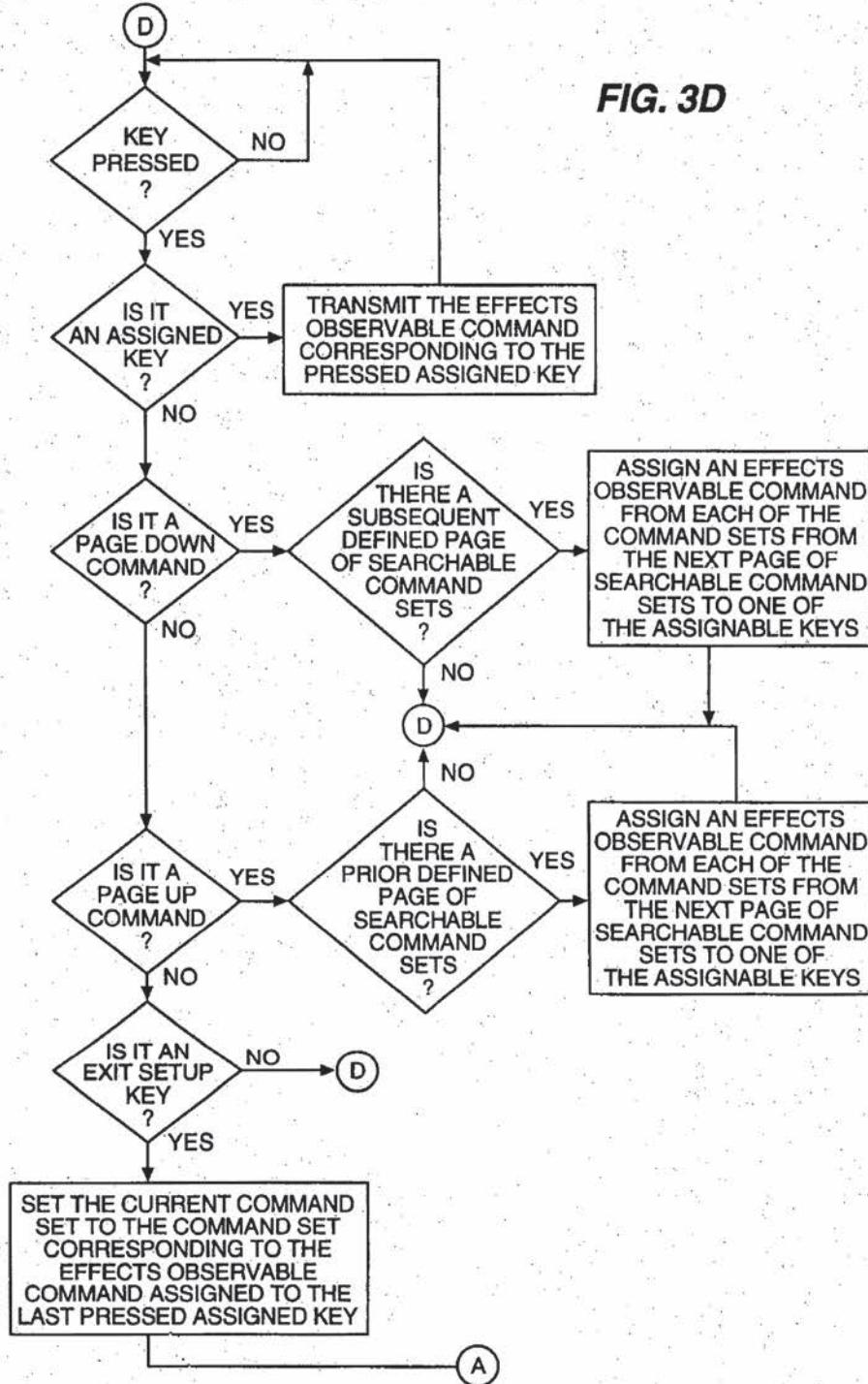
**FIG. 3B**



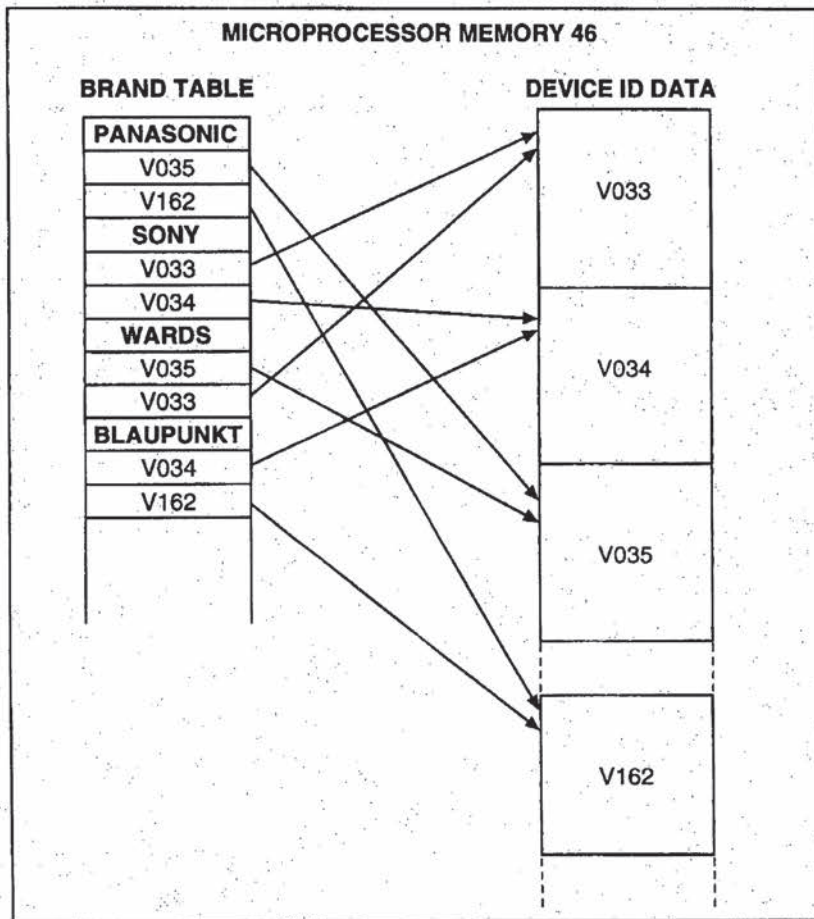
**FIG. 3C**



APPROVED BY: D.G. FIS. 37  
 CLASS: 341  
 SUBCLASS: 176  
 CONFIDENTIAL



APPROVED U.G. FIG.  
BY CLASS SUBCLASS  
DRAFTSMAN



**FIG. 4**

Transaction History Date: 1997-03-25  
Date information retrieved from USPTO Patent  
Application Information Retrieval (PAIR)  
system records at www.uspto.gov

PTO UTILITY GRANT

Paper Number 5

The  
United  
States  
of  
America



The Commissioner of Patents  
and Trademarks

*Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.*

*Therefore, this*

United States Patent

*Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.*

*If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.*

*If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.*

*Bence Lehman*

Commissioner of Patents and Trademarks

*Pamela Morton*  
Agent

Form PTO-1584 (Rev. 5/96)