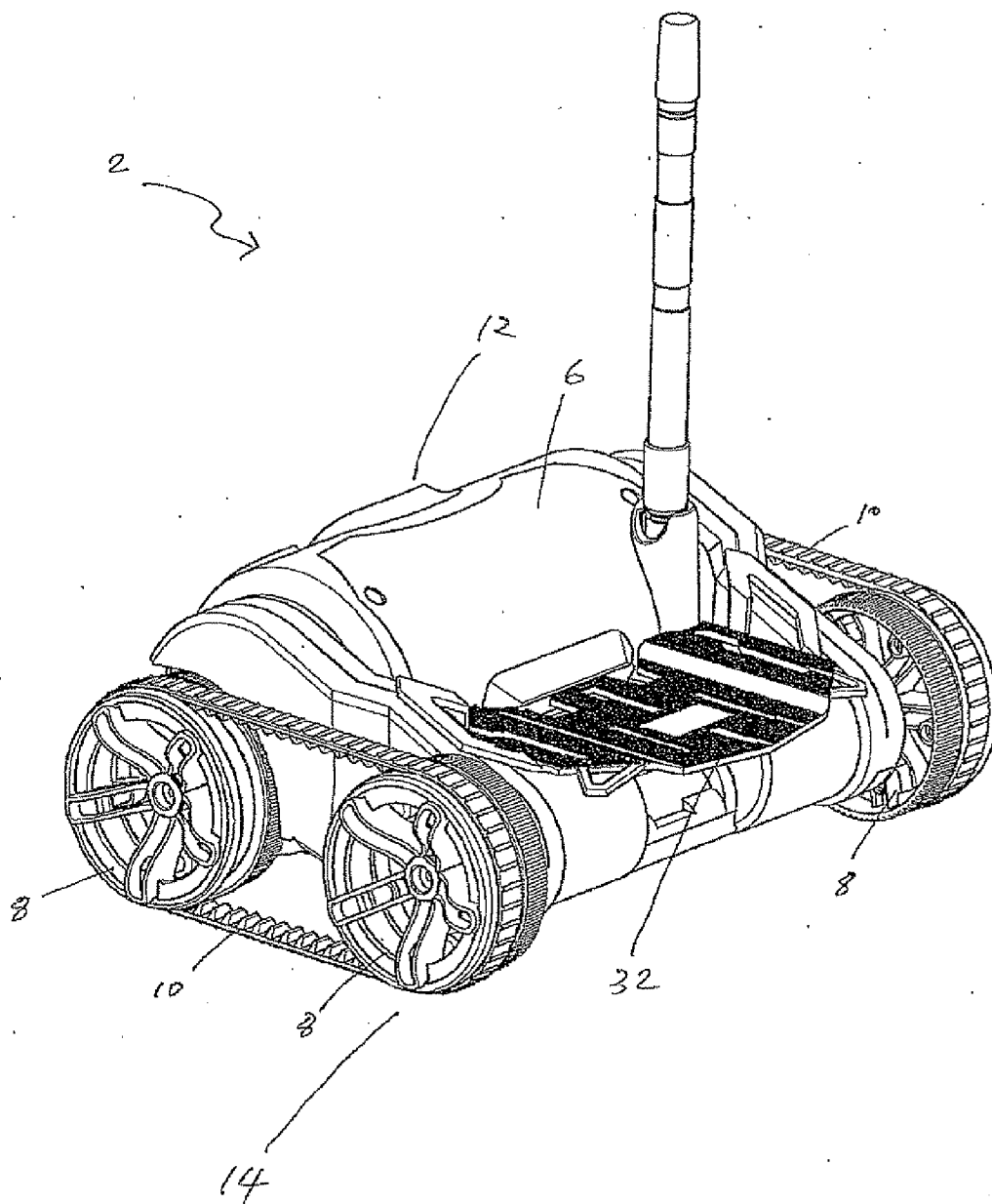


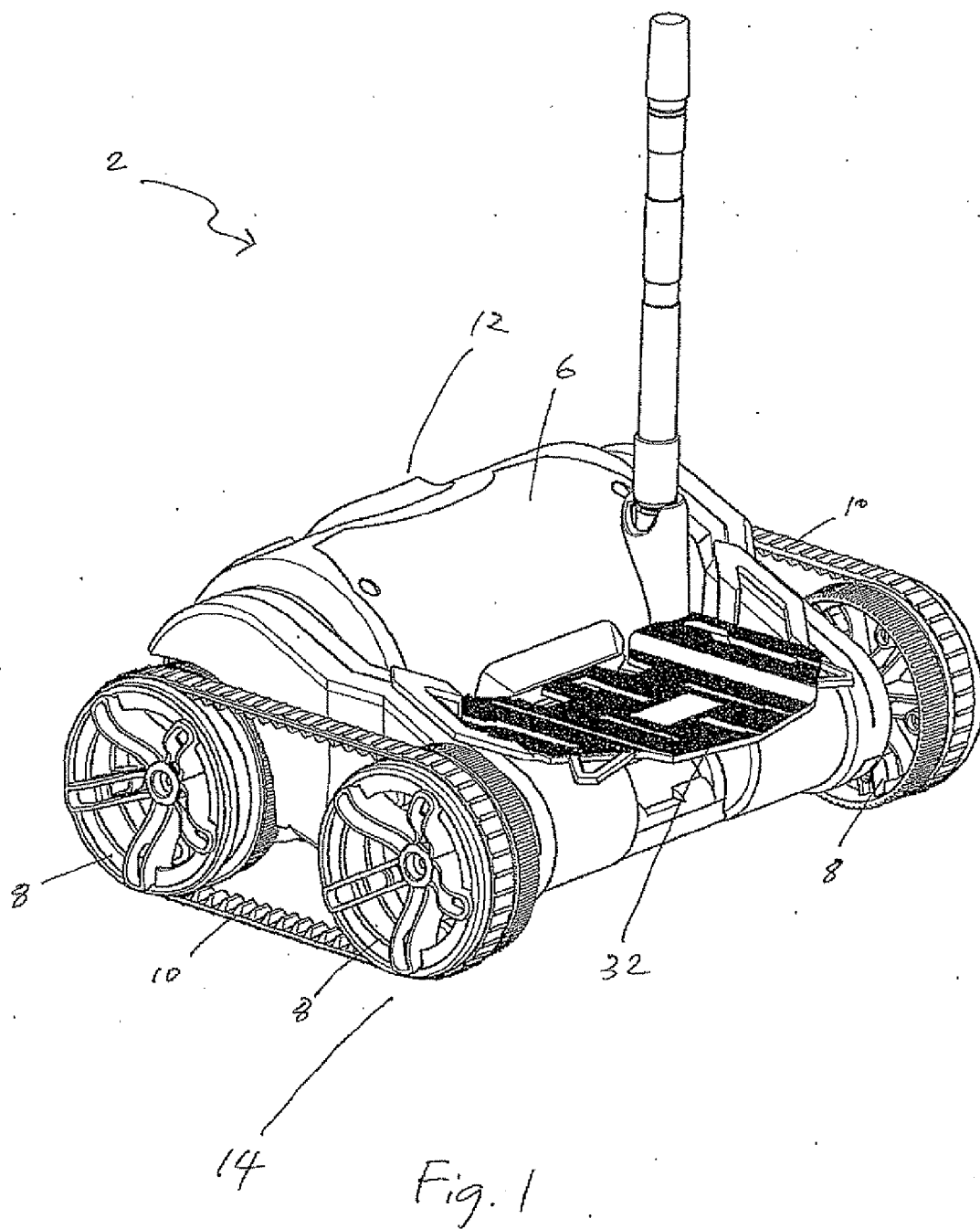


US 20120088436A1

(19) **United States**(12) **Patent Application Publication**
Grossman(10) **Pub. No.: US 2012/0088436 A1**(43) **Pub. Date: Apr. 12, 2012**(54) **TOY APPARATUS**(52) **U.S. Cl. 446/454**(76) **Inventor: Danny Grossman, San Francisco, CA (US)**(57) **ABSTRACT**(21) **Appl. No.: 12/900,868**(22) **Filed: Oct. 8, 2010****Publication Classification**(51) **Int. Cl. A63H 30/00 (2006.01)**

The present invention is concerned with a toy apparatus system. The system includes a remote control car unit and a control unit, which are communicable with each other wirelessly, and an external computer connectable with the car unit and/or the control unit for modifying programs for use by the car unit and/or the control unit.





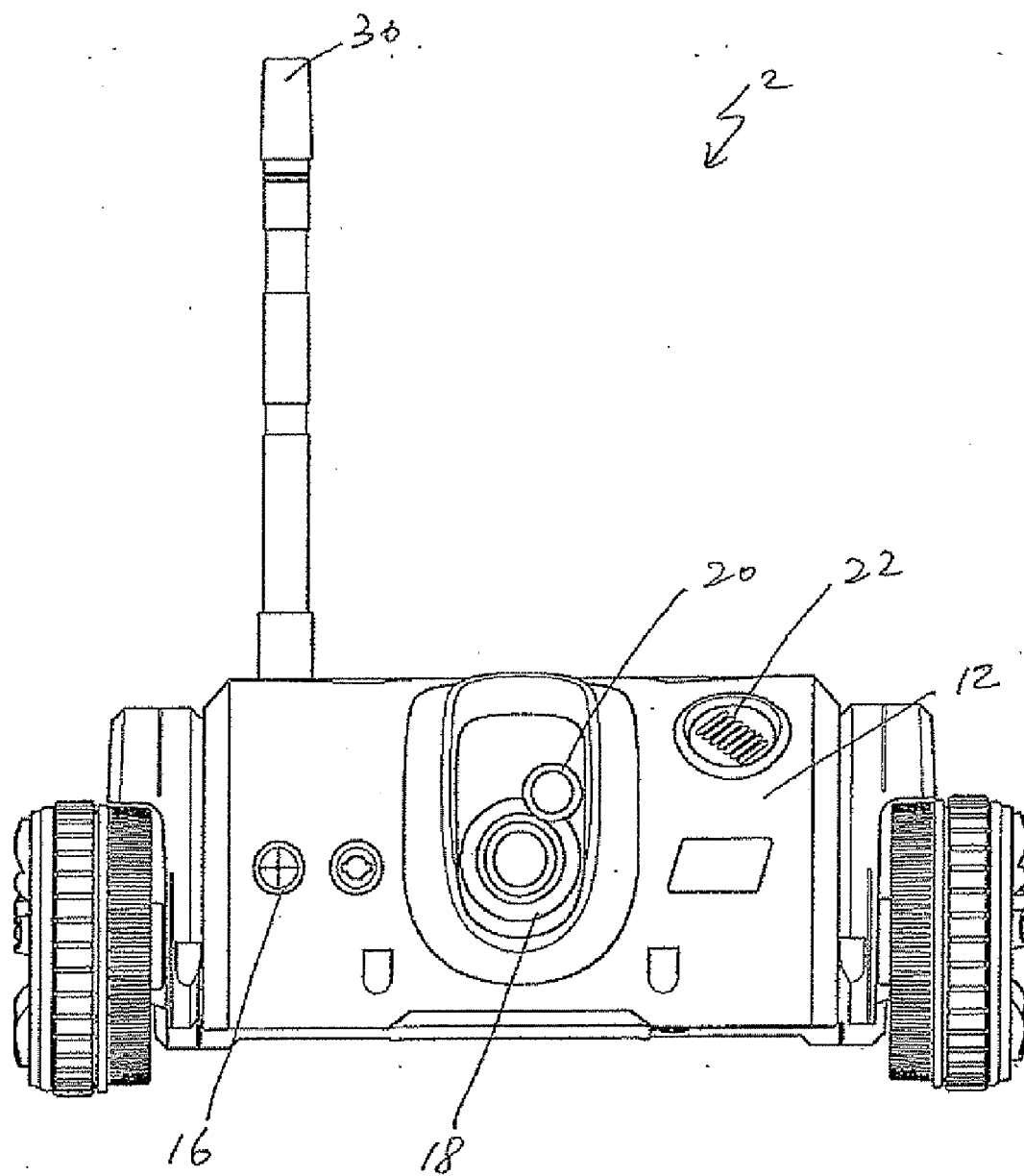


Fig. 2

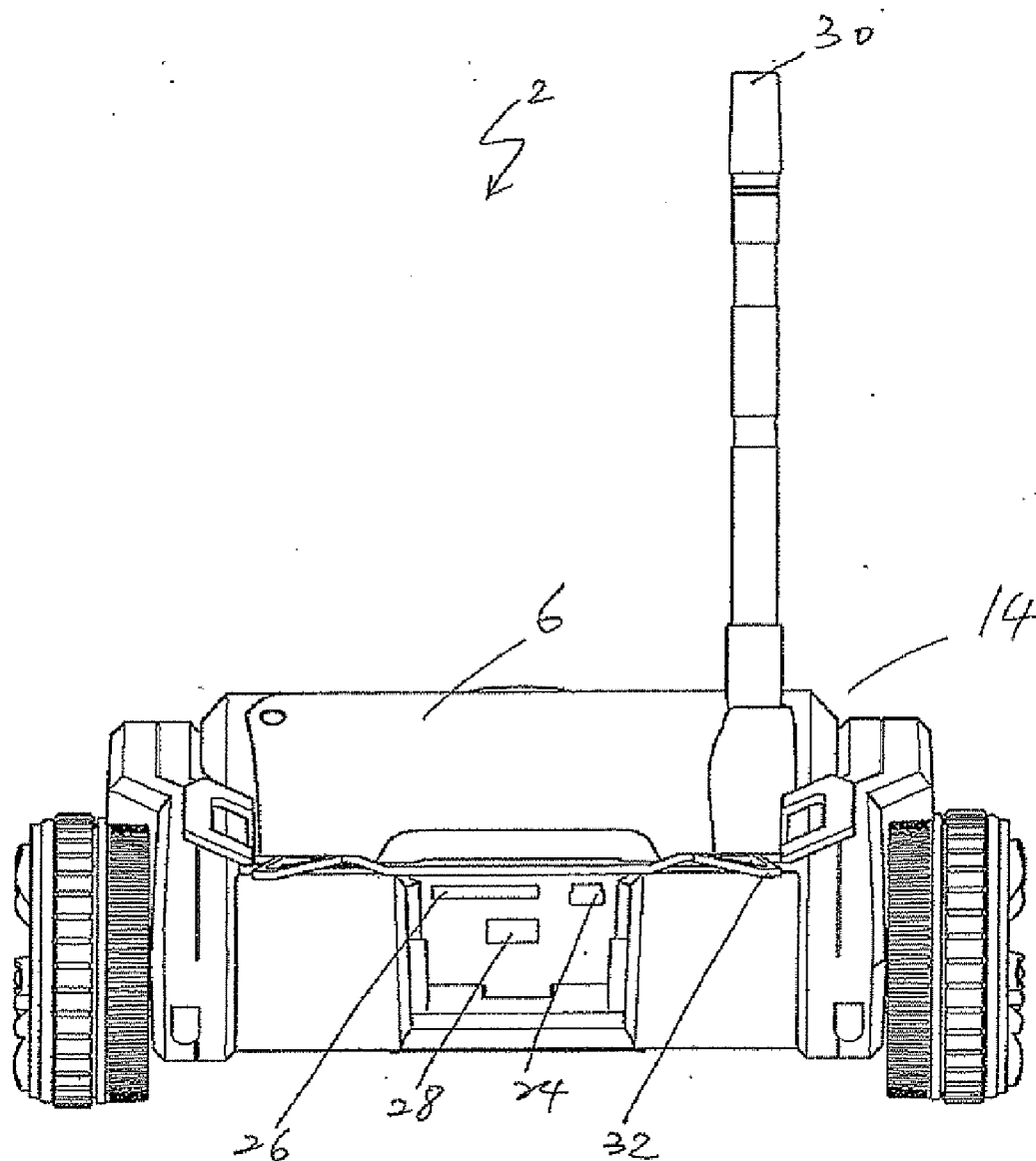
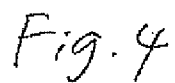


Fig. 3



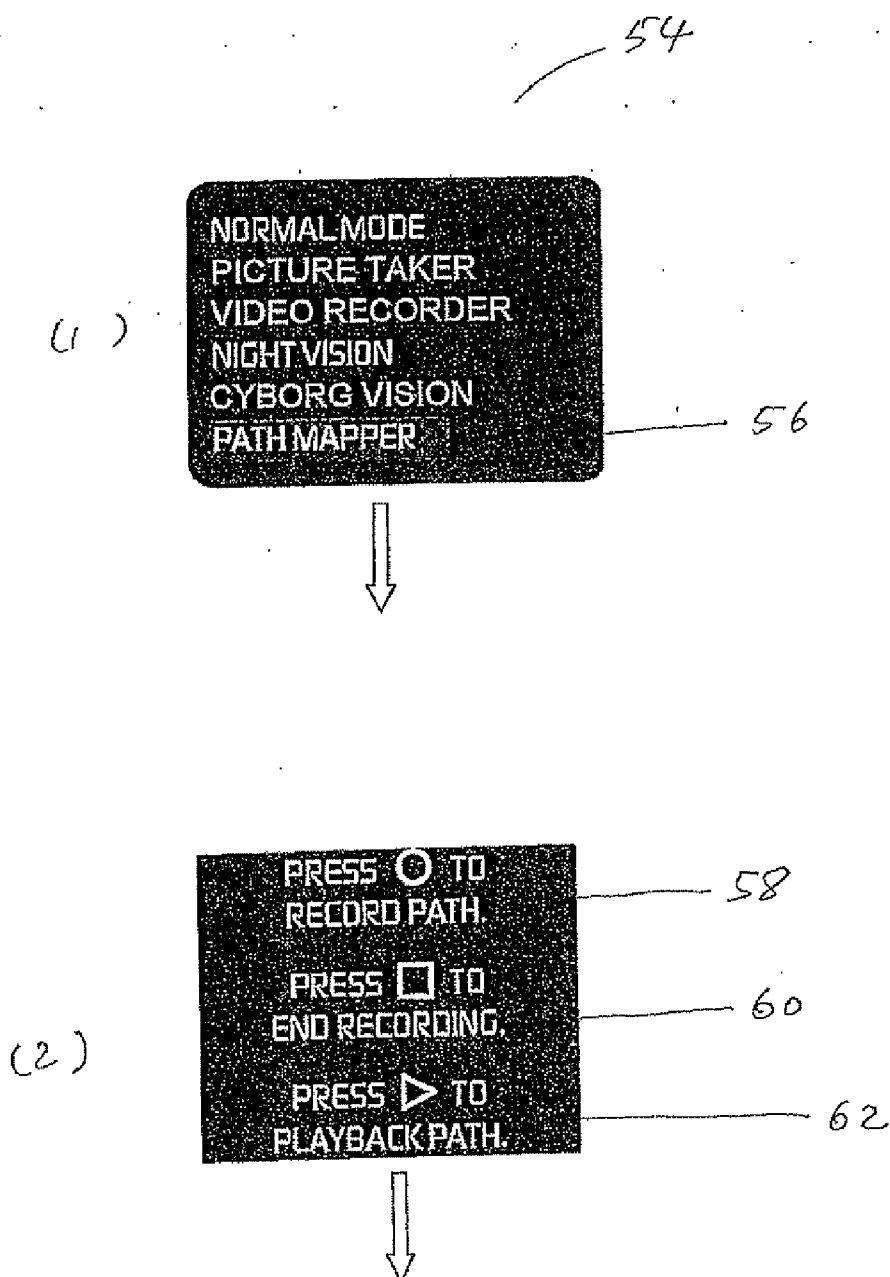
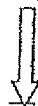
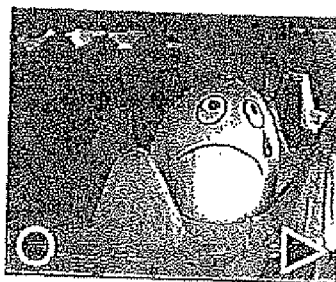
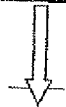
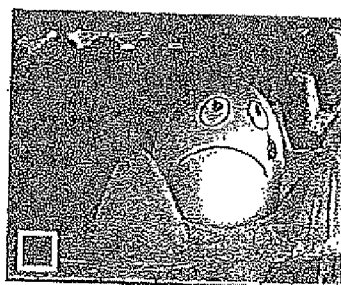


Fig. 5a

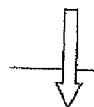
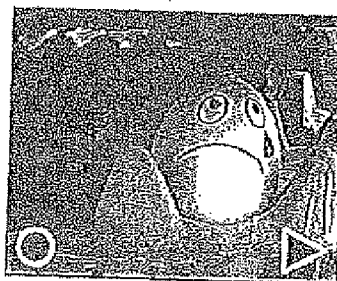
(3)



(4)



(5)



(6)

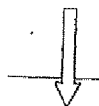
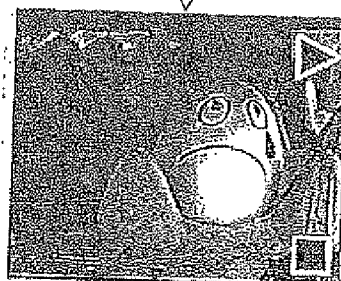
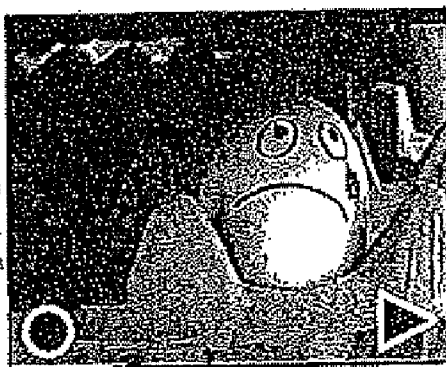


Fig. 56

(7)



(8)

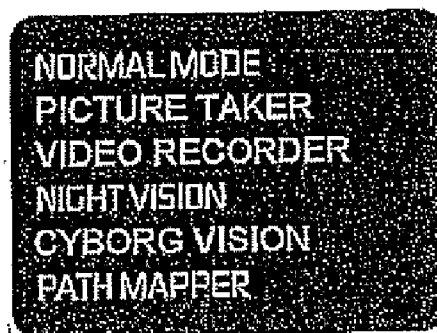


Fig. 5c

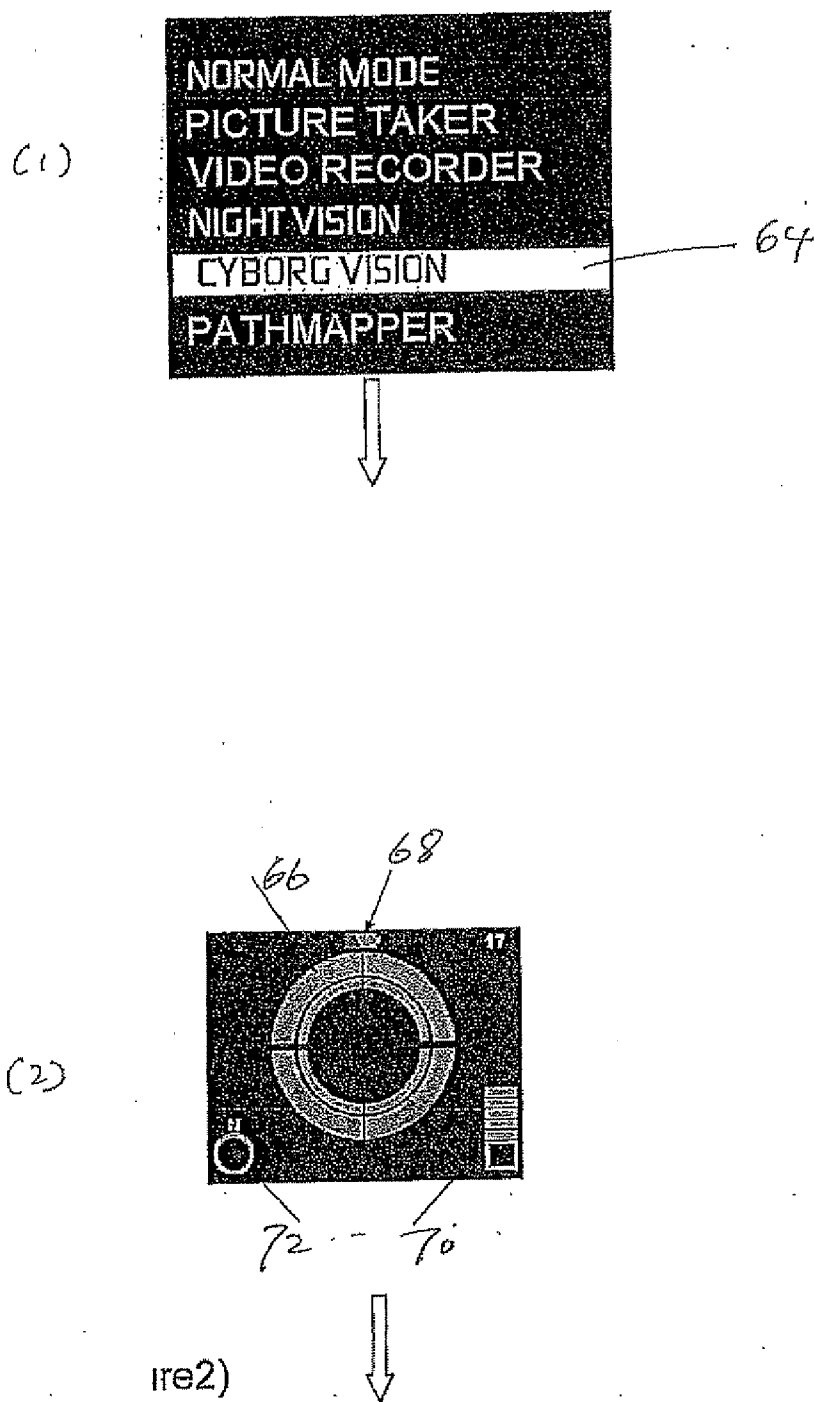
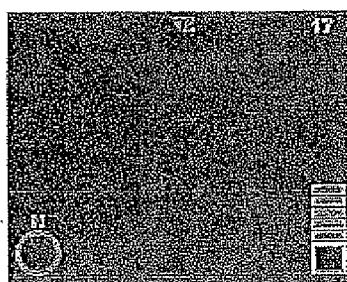
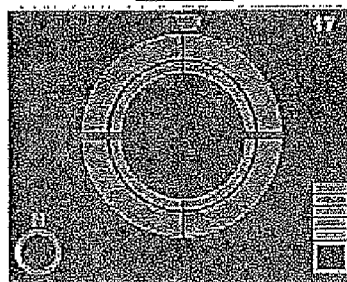


Fig. 6a

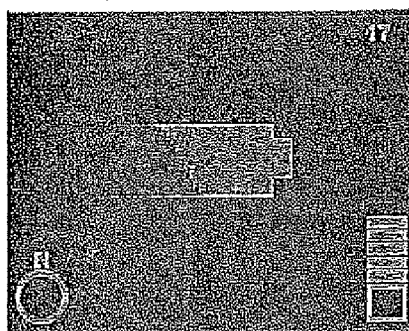
(3)



(4)



(5)



(6)

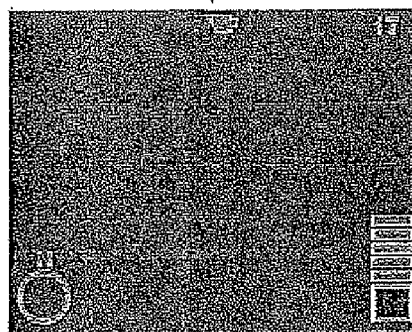


Fig. 66

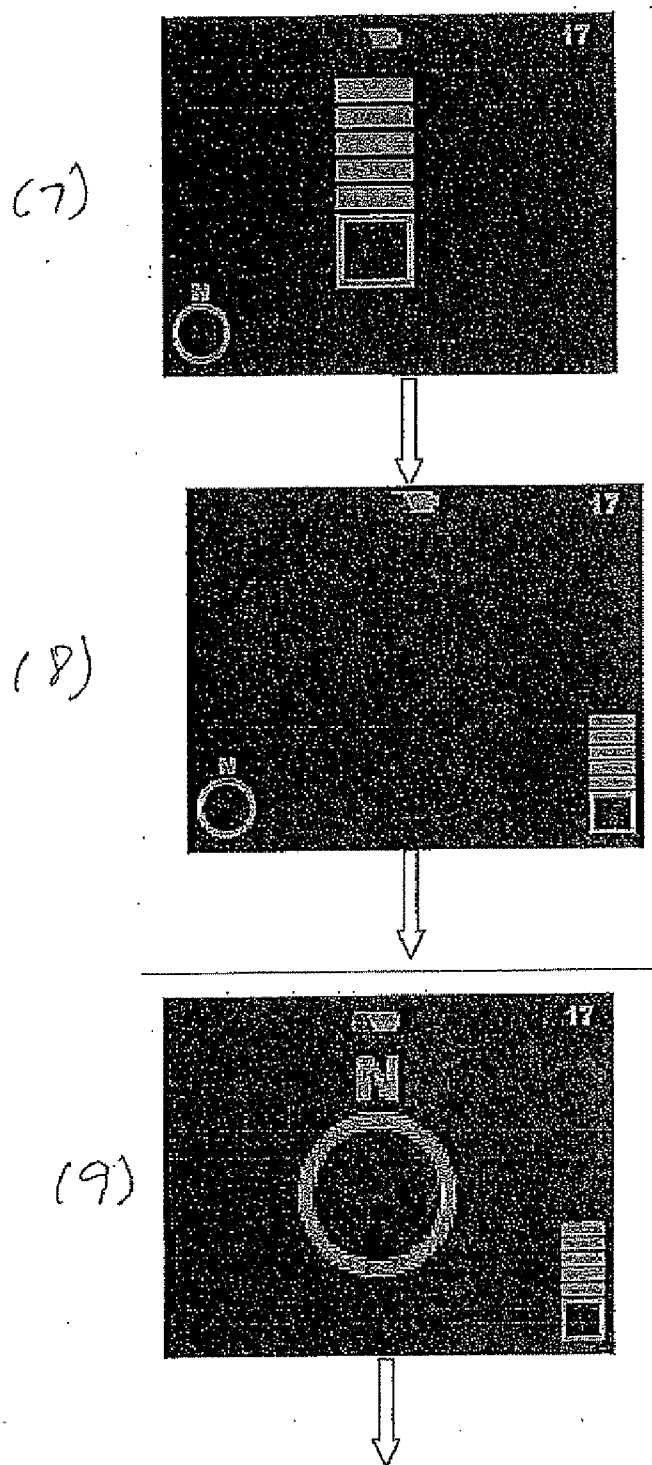


Fig. 6c

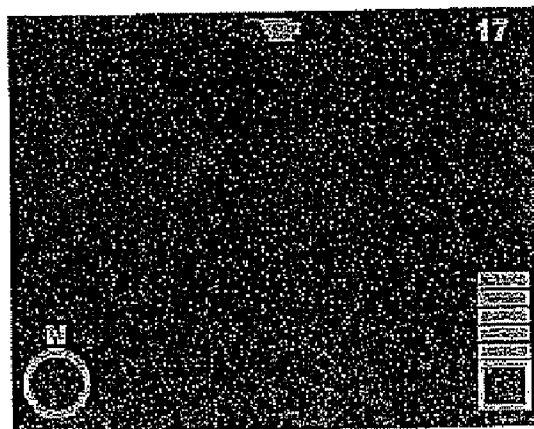
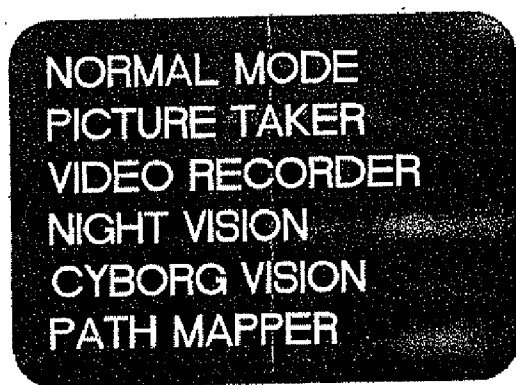
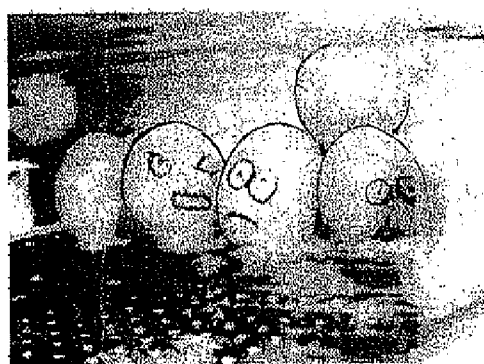


Fig. 17d

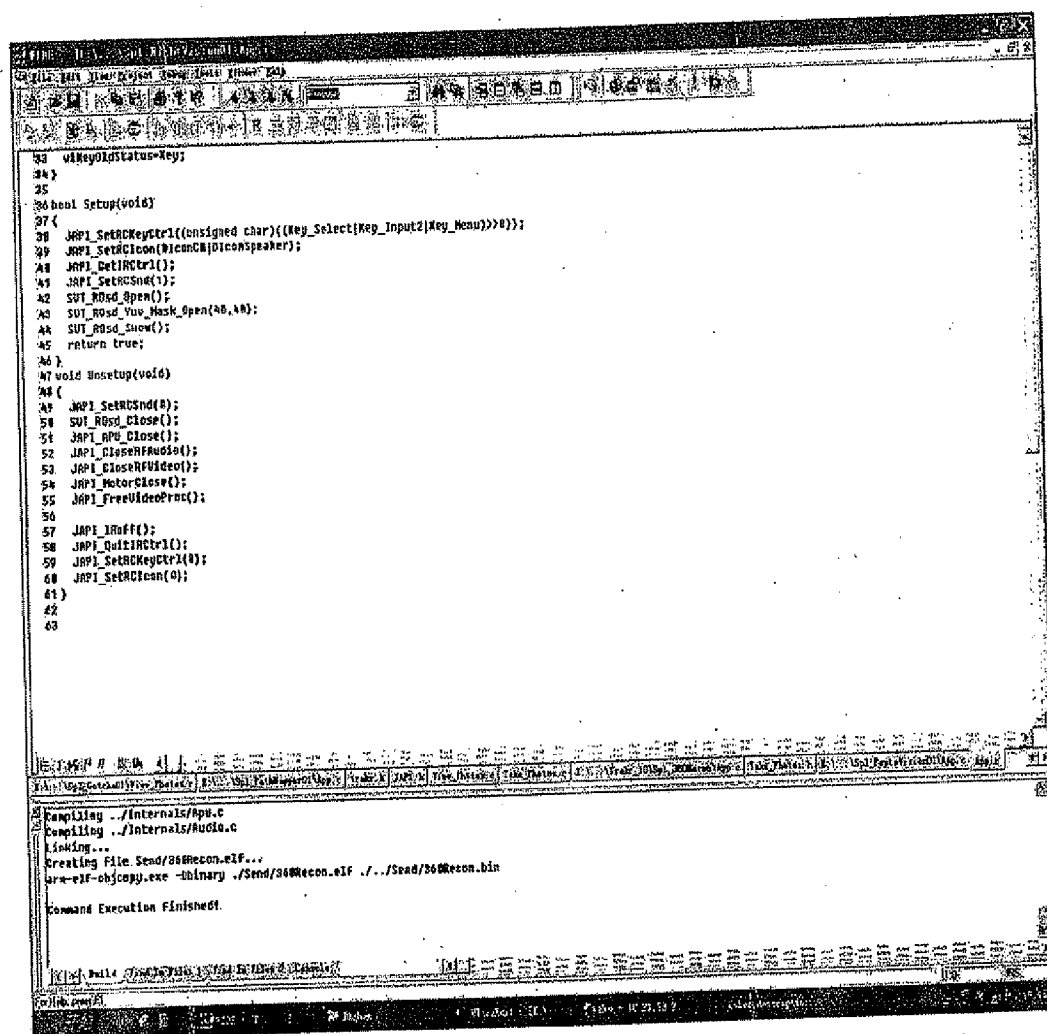


(1)



(2)

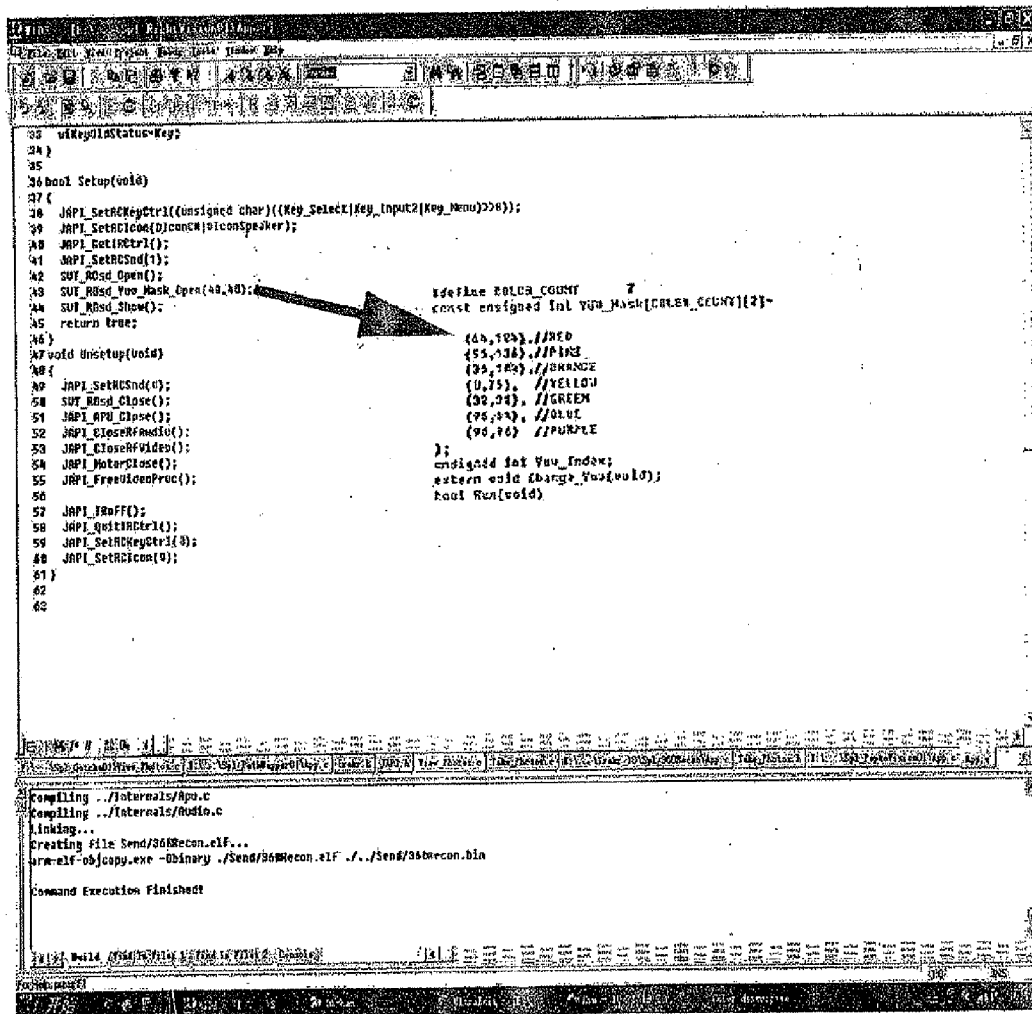
fig. 7a



```
33 viKeyOldStatus=Key;
34 }
35
36 bool Setup(void)
37 {
38     JRP1_SetRCKeyCtrl((unsigned char)((Key_Select[Key_Input2|Key_Menu])));
39     JRP1_SetRCIcon(VicamCMIDIconSpeaker);
40     JRP1_SetRCCtrl();
41     JRP1_SetRCSnd();
42     SUI_RSD_Open();
43     SUI_RSD_Vuv_Mask_Open(48,48);
44     SUI_RSD_Show();
45     return true;
46 }
47
48 void Unsetup(void)
49 {
50     JRP1_SetRCSnd();
51     SUI_RSD_Close();
52     JRP1_RPW_Close();
53     JRP1_CloseRFVideo();
54     JRP1_MotorClose();
55     JRP1_FreeVideoProc();
56 }
57
58 JRP1_Init();
59 JRP1_QuitRCtrl();
60 JRP1_SetRCKeyCtrl(0);
61 JRP1_SetRCIcon(0);
62 }
63
```

Compiling ../Internals/Rpu.c
Compiling ../Internals/Audio.c
Linking...
Creating File Send/86Mecon.elf...
avr-elf-objcopy.exe -binary ./Send/86Mecon.elf ../Send/86Mecon.bin
Command Execution Finished.

fig. 7b



```
33 wKeyStatus-Key;
34 }
35
36 bool Setup(void)
37 {
38     JAPI_SetKeyCtrl((unsigned char)((Key_Select|Key_Input2|Key_Menu)>>8));
39     JAPI_SetClick(0|click|clickSpeaker);
40     JAPI_SetClick(1);
41     JAPI_SetClick(2);
42     SUI_Rose_Open();
43     SUI_Rose_Vue_Mask_Open(48,40);
44     SUI_Rose_Show();
45     return true;
46 }
47 void Unsetup(void)
48 {
49     JAPI_SetClick(0);
50     SUI_Rose_Close();
51     JAPI_RPU_Close();
52     JAPI_CloseRFradio();
53     JAPI_CloseRFvideo();
54     JAPI_MotorClose();
55     JAPI_FreezeOpenProc();
56
57     JAPI_Proc();
58     JAPI_GetKeyCtrl();
59     JAPI_SetKeyCtrl(0);
60     JAPI_SetClick(0);
61 }
62
```

```
#define COLOR_COUNT 7
const unsigned int Yuv_Mask[COLOR_COUNT][3]=
{
    {48,48}, //RED
    {55,55}, //PINK
    {33,33}, //ORANGE
    {0,75}, //YELLOW
    {33,33}, //GREEN
    {75,75}, //BLUE
    {75,75}, //PURPLE
};
unsigned int Yuv_Index;
extern void Change_Yuv(void);
bool Run(void)
```

Compiling ../Internals/Api.c
Compiling ../Internals/Api.c
Linking...
Creating file Send/36Mecon.elf...
arm-elf-objcopy.exe -binary ./Send/36Mecon.elf ./Send/36mecon.bin
Command Execution Finished

fig. 7c



fig. 7d

TOY APPARATUS

FIELD OF THE INVENTION

[0001] The present invention is concerned with a toy apparatus and in particular a remote control toy vehicle.

BACKGROUND OF THE INVENTION

[0002] There are a variety of remote control toy apparatus in the market. Remote control toy apparatus has been popular for a long time because a user can earn a sense of control and satisfaction by controlling movement of an object (typically a car) from a distance. Certain skills may be required in controlling the object satisfactorily and the user can take that as a challenge.

[0003] Users have become more sophisticated over the years and expectation from toy apparatus or remote control cars has increased. The present invention seeks to provide a toy apparatus which can not only serve as a plaything but also an educational tool. Further, the present invention seeks to provide a toy apparatus that encourages interactivity between the toy apparatus and the user. The present invention also seeks to provide a toy apparatus which allows a user to customize and/or update the toy apparatus after purchase.

[0004] The present invention seeks to address these issues, or at least to provide a useful alternative to the public.

SUMMARY OF THE INVENTION

[0005] According to a first aspect of the present invention, there is provided a toy apparatus comprising (a) a car unit and a control unit, which are communicable with each other wirelessly, (b) a first memory medium containing one or more files of a first type, the or each of the files containing a first type of instructions for action the car unit can perform, and/or means for receiving and storing one or more files of a second type, the or each of the files containing a second type of instructions for action the car unit can perform, and wherein the toy apparatus is configured to allow downloading of files to and/or uploading files from the first memory medium. The downloading or uploading of modified files or new files to/from the first memory medium allows a user to tailor functionalities of the toy apparatus.

[0006] Preferably, the car unit and the control unit may be communicable via digital radio frequency signal.

[0007] In one embodiment, the car unit may include a camera and/or a first microphone for collecting video and audio information of surroundings. The control unit may include a display screen configured to display image captured by the camera. The control unit may include a first speaker for broadcasting sound of the surroundings captured by the microphone.

[0008] In another embodiment, the car unit may include a second speaker for broadcasting sound of the surroundings.

[0009] Preferably, the first memory medium may reside in the car unit. The car unit may be larger in size and may provide more design freedom for accommodating the first memory medium. The first memory medium may be connectable to an external computer by a cable via which files can be downloaded to the first memory medium, uploaded from the first memory medium or modified in the first memory.

[0010] The means for receiving and storing the second type of files may reside in the car unit and include a second memory medium, the second memory medium may be in the

form of a memory card being removable from the car unit and connectable with an external computer.

[0011] The toy apparatus may comprise an inlet for connection with a USB device. The USB device may be an accessory provided with a USB connection for connection with the inlet. Once connected to the car unit, the USB device may be configured to perform a specific action on instructions from the user via the control unit and the car unit.

[0012] The control unit may be configured to display options corresponding to instructions of the first and/or second type such that selection of one of the options effects a respective action.

[0013] The control unit may be provided with an inlet via which firmware in the control unit can be modified.

[0014] According to a second aspect of the present invention, there is provided a remote control car kit comprising (a) a car unit and (b) a control unit, wherein the car unit and the control unit are communicable with each other wirelessly, wherein the car unit includes (i) a first memory medium containing one or more files of a first type, the or each of the files containing instructions of a first type for action the car can perform, and/or (ii) means for receiving and storing one or more files of a second type, the or each of the files containing instructions of a second type for action the car unit can perform, and wherein the car unit is configured to allow downloading of files to and/or uploading files from the first memory medium.

[0015] The kit may comprise a cable for connecting the car unit with an external computer for, for example, modifying the first type of files. The receiving and storing means may include a second memory medium in the form of a memory card removable from the car unit and connectable with an external computer such that files contained therein are modifiable. The car unit may include an inlet for connection with a USB device.

[0016] According to a third aspect of the present invention, there is provided a toy apparatus system, comprising (a) a car unit and a control unit, which are communicable with each other wirelessly, and (b) an external computer connectable with the car unit and/or the control unit for modifying programs for use by the car unit and/or the control unit.

[0017] In one embodiment, the external computer may be accessible to a website in the Internet via which programs for use in operation of the car unit and/or the control unit are generated, downloaded, uploaded and/or shared. The toy apparatus system may provide a connection with the external computer by way of a connection cable. Alternatively, the connection with the external computer may be made indirectly using removable memory card as a medium.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] Embodiments of the invention are described, by way of non-limiting example only, with reference to the following drawings in which:—

[0019] FIG. 1 is a perspective view of an embodiment of a car unit of a toy apparatus according to the present invention;

[0020] FIG. 2 is a front view of the car unit shown in FIG. 1;

[0021] FIG. 3 is a rear view of the car unit shown in FIG. 1;

[0022] FIG. 4 is a top perspective view of an embodiment of a control unit for use with the car unit shown in FIG. 1;

[0023] FIGS. 5a to 5c illustrate images displayed on a screen of the control unit during an operation;

[0024] FIGS. 6a to 6d illustrate images displayed on the screen during another operation;

[0025] FIGS. 7a and 7d illustrate images displayed on the screen during yet another operation; and

[0026] FIGS. 7b and 7c illustrate modification of parameters of a certain built-in function of the toy apparatus.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

[0027] A first embodiment of the present invention is concerned with a toy apparatus comprising a car unit, generally designated 2, and a control unit, generally designated 4.

[0028] FIGS. 1 to 3 show the car unit 2. The car unit 2 includes a car body 6 and two pairs of wheels 8 connected by a pair of belts 10. The belts 10 are threaded to provide a better grip of the floor or ground surface. The car body 6 houses a motor for driving movement of the wheels 8 and the belts 10. The car unit 2 has a front end 12 and a rear end 14. As shown in FIG. 2, the front end 12 is provided with a microphone 16, an adjustable camera 18, a night vision indicator 20 and a speaker 22. As shown in FIG. 3, the rear end 14 is provided with three connection ports, namely a USB port 24, a memory card slot 26 and an accessory USB port 28. The USB port is connected to an internal memory of the car unit 2. The memory card slot 26 in this embodiment is configured to receive a SD/SDHC memory card which acts as an external or removable memory. An antenna 30 is vertically extended from the car body. A transport deck in the form of a platform 32 is also arranged at the rear end 14 of the car body 6. A switch to power on/off the car unit 2 is provided at the bottom of the car body 6.

[0029] FIG. 4 shows the control unit 4. The control unit 4 has a general rectangular profile with two cylindrical shape members 34 arranged on lateral opposite sides thereof. Each cylindrical shape member 34 is sized and shaped to fit the grip of the hand of a user. A pair of joy sticks 36 is arranged on an upper end of the cylindrical members 34 for providing steering control of the car unit 4. The joy sticks 36 are positioned to allow control thereof by the thumbs of a user. A display screen 38 in the form of a color video monitor is provided on an upper end 40 of the control unit 4. The control unit 4 also has a speaker 42 and a microphone. A number of operation controls including an audio on/off button 46, a volume control 48 and an on/off switch 50 and other controls 51 are provided. An antenna 52 is also provided.

[0030] It is to be noted that the control unit 4 and the car unit 2 can communicate with each other by digital radio frequency.

[0031] In other embodiments of the present invention, a set of standard actions that the toy apparatus can perform is built into the toy apparatus. Specifically, instructions of the standard actions are saved as files or programs in the internal memory of the car unit 2. When both the control unit 4 and the car unit 12 are powered on, the control unit 4 can access to the programming files and a list of the standard actions can be viewed in a menu from the display 38 of the control unit 4. A user on reviewing the list of standard actions can then select which action is desired. In this embodiment, one action that can be selected is the normal remote control of the car unit 2. When this action is desired, the selection "normal mode" can be selected from the list. Once this mode is selected, the user can maneuver the car unit 2 by using the joy sticks 36. Radio

frequency corresponding to instructions from the user is transmitted from the antenna 52 of the control unit 4 to the antenna 30 of the car unit 2.

[0032] The toy apparatus has video capability. When a user wishes to view what the car unit 2 sees during an exercise, the user can activate the video function by switching on the video function via selection in the menu displayed on the display 38. As described above, the car unit 2 is equipped with the camera 18. The camera 18 serves to capture video image viewed by the camera 18, and signals of captured video image are transmitted from the antenna 30 of the car unit 2 to the antenna 52 of the control unit 4. The captured video image is then displayed real time in the video screen 38 of the control unit 4. This video function is advantageous in that in most conventional remote control cars, a user would have to see the car during a control exercise. In this embodiment, a user can control the car unit 12 to go behind a wall and the user would still be able to see what the car unit 2 sees from the video screen 38 despite the car unit 2 has become out of sight. It is thus envisaged that a user can control the car unit 2 from a distance to approach a target and examine the target at a close distance via the camera 18 and the video screen 38.

[0033] The camera 18 is configured to be able to capture image at night time or when the light is very dim. In other words, the camera 18 has night vision. When night vision is needed, a user can select the night vision mode from the menu. Under the night vision mode, image captured by the camera can be seen at the video screen 38 of the control unit 4. It is thus envisaged that a user can control the car unit 2 at night time, approach a target discreetly and then examine the target at a close distance via the camera 18. During night vision, the night vision indicator is on with a red light.

[0034] The car unit 12 is configured to take pictures of the surroundings via the camera 18. In either the normal video mode or night time video mode, if the user would like to take a picture of a particular scene, it can be done remotely via the control unit 4. In this embodiment, a picture taken can be stored in the external memory. The car unit 4 is also configured to take a video clip via the camera 18. Similarly, in this embodiment, a video clip that has been taken can be stored in the external memory. It is however envisaged that in other embodiments, the toy apparatus may be configured such that pictures or video clips taken can be stored in an alternative memory.

[0035] The toy apparatus has an audio capability. As explained above, both the car unit 2 and the control unit 4 are equipped with a speaker and a microphone. The microphone 16 of the car unit 2 can receive sound of the surroundings and signal of the sound received by the microphone 16 of the car unit 2 can be broadcasted via the speaker 22 of the control unit 4. In other words, audio signal is communicated and transmitted from the car unit 2 to the control unit 4. It can thus be understood that during a movement exercise a user can hear what the car unit 2 hear from a distance. It can thus be understood that a user can control the car unit 2 to move close to a person from a distance. The user will then be able to hear the sound from the surroundings of the car unit or conversation of the person.

[0036] As described above, in addition to the movement functionality of the toy apparatus it also provides the video and audio functionalities. The following describes further functionalities of the toy apparatus.

[0037] FIGS. 5a to 5c illustrate a function of path mapping. FIG. 5a-1 specifically shows the list of standard actions from

a menu **54**. One of the actions is Path Mapper **56**. This action allows a user to record a path of the car unit **2**. The recorded path can then be repeated at a later time. When this function is selected, the display will enter a different mode and provide a number of options including the options of “Record Path” **58**, “End Recording” **60** and “Playback Path” **62**. Please see FIG. **5a-2**. A user can take advantage of this function to effectively teach the car unit **2** to travel from one location to another location once, and then the car unit **2** will be able to repeat the same movement on its own because information of the particular movement or path has been stored in the internal memory. FIGS. **5b-3** to **5b-6** show exemplary views displayed by the video screen **38** during different stages of a path recording exercise. FIG. **5b-6** shows that a recorded path can be played back and the car unit **2** can drive the recorded path on its own. After a path mapping or playback exercise, the display will return to its menu screen.

[**0038**] FIGS. **6a** to **6d** illustrate a function called Cyborg vision. When this mode **64** is selected, the image displayed in the screen will include a number of gauges showing different parameters of the car unit. These gauges will include a coordinate indicator **66** in the form of a circle, a battery indicator **68**, a speedometer **70** and a compass **72**. When this mode is activated, as a user maneuvers the car unit **2** these parameters will show in the screen, providing further information or status of the car unit **2** to the user. This is particularly useful when the car unit **2** is some distance away from the user. The selection of this mode can also create a sense of futurism to the user during an operation. The apparatus is also configured such that each of the gauges can be enlarged to show clearly the respective parameter, as shown in FIG. **6b-4**, FIG. **6b-5**, FIG. **6c-7** and FIG. **6c-9**.

[**0039**] FIG. **7a** illustrates a function called Night vision. When this function is activated, the camera **18** can capture video of the surroundings even when it is at a low light environment.

[**0040**] Each of the built-in functions is defined and programmed by files stored in the internal memory. The toy apparatus is configured such that these files are modified by the user. This may be done by connecting the car unit **2** to an external computer by using a connection cable. One end of the cable is connected to the internal memory of the car unit **2** while the other end of the cable is connected to the computer. Once connected, the computer can access the files defining the functions.

[**0041**] With regard to the function of Night vision, one of the reasons night vision can be displayed is that the monitor **38** is configured to display different colors of lights according to predetermined parameters in the certain relevant file by default. While the predetermined parameters may be suitable in showing an appropriate contrast of image of the surroundings under night vision, a user can access the relevant file and adjust the parameters (corresponding to the display of different colors, e.g. red, pink, orange, yellow, green, blue, purple) according to his needs or the particular circumstances. FIG. **7b** illustrates a particular file with predetermined files before it has been modified by the user. FIG. **7c** illustrates a particular file after it has been modified by the user. It is to be noted that the essence of FIGS. **7b** and **7c** is not to teach programming, but rather to demonstrate the customizability of the toy apparatus. FIG. **7d** shows that after the user has modified the file as in FIG. **7c**, a different (or generally) darker night vision image will be shown in the display.

[**0042**] Accessing the relevant file is conducted by firstly connecting the car unit **2** and an external computer with a connection cable. Modification to the relevant file in the internal memory of the car unit **2** can be performed at the external computer. Alternatively, new files of further functionalities can be transferred from the external computer to the internal memory of the car unit **2**. Yet alternatively, new files of new functionalities may be downloaded to the internal memory from an internet website. Further, users can write their own programs for desired functionalities and save these programs as files. Different users can then share these programs.

[**0043**] As described above, the car unit **2** is provided with the memory card slot capable of receiving a memory card. The memory card slot and the memory card provide an alternative way of including modified or new programming files in the car unit **2**. Thus, in addition to modifying or receiving programming files in the internal memory of the car unit the memory card slot provides an auxiliary port of storing programming files. Once stored in the memory card slot, functions corresponding to the files can be selected via the control unit **4**.

[**0044**] As described above, the car unit **2** is provided with an accessory slot. The accessory slot is provided to allow expansion of functionality. In this particular embodiment, an accessory in the form of an add-on USB is provided. The USB device is USB-connectable with the USB port **28**. Specifically, in this embodiment, the USB device is configured to be able to eject a dart. Once the car unit is equipped with the USB device, a user can select this function of ejecting a dart via the control unit, and the user can then remotely control the car unit to eject a dart from a distance.

[**0045**] It should be noted that for clarity purpose conventional technologies are not explained in detail because a skilled person in the art, on reading this description, will understand that these technologies can be used with the teachings of the description. Certain features of the invention, which are, for brevity, described in the content of separate embodiments, may be provided in combination in a single embodiment. Conversely, various features of the invention which are, for brevity, described in the content of a single embodiment, may be provided separately or in any appropriate sub-combinations.

1. A toy apparatus comprising:—

- (a) a car unit and a control unit, which are communicable with each other wirelessly;
- (b)(i) a first memory medium containing one or more files of a first type, the or each said file containing a first type of instructions for action said car can unit perform, and/or
- (ii) means for receiving and storing one or more files of a second type, the or each said file containing a second type of instructions for action said car unit can perform; and

wherein said toy apparatus is configured to allow downloading of files to and/or uploading files from said first memory medium.

2. A toy apparatus as claimed in claim **1**, wherein said car unit and said control unit are communicable via digital radio frequency signal.

3. A toy apparatus as claimed in claim **1**, wherein said car unit includes a camera and/or a microphone for collecting information of surroundings.

4. A toy apparatus as claimed in claim 3, wherein said control unit includes a display screen configured to display image captured by said camera.

5. A toy apparatus as claimed in claim 3, wherein said control unit includes a first speaker for broadcasting sound captured by said microphone.

6. A toy apparatus as claimed in claim 1, wherein said car unit includes a second speaker for broadcasting sound.

7. A toy apparatus as claimed in claim 1, wherein said first memory medium resides in said car unit.

8. A toy apparatus as claimed in claim 7, wherein said first memory medium is connectable to an external computer by a cable via which files can be downloaded to said first memory medium, uploaded from said first memory medium or modified in said first memory.

9. A toy apparatus as claimed in claim 1, wherein said receiving and storing means resides in said car unit and includes a second memory medium, said second memory medium is in the form of a memory card being removable from said car unit and connectable with an external computer.

10. A toy apparatus as claimed in claim 1, comprising an inlet for connection with a USB device.

11. A toy apparatus as claimed in claim 1, wherein said control unit is configured to display options corresponding to instructions in the first or second type of instructions such that selection of one of the options effects a respective action.

12. A toy apparatus as claimed in claim 1, wherein said control unit is provided with an inlet via which firmware in said control unit can be modified.

13. A remote control car kit comprising:—

(a) a car unit;

(b) a control unit;

wherein said car unit and said control unit are communicable with each other wirelessly;

wherein said car unit includes (i) a first memory medium containing one or more files of a first type, the or each

said file containing instructions of a first type for action said car can perform, and/or (ii) means for receiving and storing one or more files of a second type, the or each said file containing instructions of a second type for action said car can perform; and

wherein said car unit is configured to allow downloading of files to and/or uploading files from said first memory medium.

14. A kit as claimed in claim 13, comprising a cable for connecting said car unit with an external computer for modifying the first type of files.

15. A kit as claimed in claim 13, wherein said receiving and storing means includes a second memory medium in the form of a memory card removable from said car unit and connectable with an external computer such that files contained therein are modifiable.

16. A kit as claimed in claim 13, wherein said car unit includes an inlet for connection with a USB device.

17. A toy apparatus system comprising:—

(a) a car unit and a control unit, which are communicable with each other wirelessly; and

(b) an external computer connectable with said car unit and/or said control unit for modifying programs for use by said car unit and/or said control unit.

18. A toy apparatus system as claimed in claim 18, wherein the external computer is accessible to a website in the Internet via which programs for use in operation of said car unit and/or said control unit are generated, downloaded, uploaded and/or shared.

19. A toy apparatus system as claimed in claim 17, wherein connection with the external computer is made directly via a cable.

20. A toy apparatus system as claimed in claim 17, wherein connection with the external computer is made indirectly using removable memory card as a medium.

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