

# EXHIBIT 6

07-17-02

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**JUL 15 2002**  
U.S. PATENT & TRADEMARK OFFICE

This application qualifies for Small Entity fees.

Application Number 19/715,532	Filing Date 11/16/2000	Examiner	Group An Unit
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**TO THE COMMISSIONER OF PATENTS AND TRADEMARKS**

Transmitted herewith is an amendment in the above identified application.

- Small Entity status of this application has been established under 37 CFR 1.27 by a verified statement previously submitted.
- A verified statement to establish Small Entity status under 37 CFR 1.27 is enclosed.
- No additional fee is required.

The fee has been calculated as shown below:

**RECEIVED**  
**JUL 23 2002**

**CLAIMS AS AMENDED**

Technology Center 2600

	(1)		(2)	(3)		
	CLAIMS REMAINING AFTER AMENDMENT	minus	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT NUMBER EXTRA	RATE	FEE
TOTAL CLAIMS	39	minus	38	1	x \$ 9	\$ 9
INDEPENDENT CLAIMS	15	minus	5	10	x \$ 42	\$ 420.00
MULTIPLE DEPENDENT CLAIM ADDED			0		\$ 0	0
<b>TOTAL</b>						<b>\$</b>
If applicant has small entity status under 37 CFR 1.9 and 1.27, then divide total fee by 2, and enter amount here.					<b>SMALL ENTITY TOTAL</b>	<b>\$ 429.00</b>

Brad A. Armstrong

7-15-02  
Date

*Brad A. Armstrong*  
Signature



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X/5  
BY  
7/30/02

CERTIFICATE OF EXPRESS MAILING  
Assistant Commissioner for Patents  
Washington, D. C. 20231

I hereby certify that the complete and proper document included herewith regarding U.S. application 09/715,532 is being deposited with the United States Postal Service as EXPRESS MAIL, article No. ET663103626US with sufficient postage pre-paid in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on this

date: \_\_\_\_\_

Signature: \_\_\_\_\_  
Brad A. Armstrong

RECEIVED

JUL 28 2002

Technology Center 2900

PRELIMINARY AMENDMENT

Re: Patent Application of Brad A. Armstrong  
Applicant's Docket No. 30

Serial No.: 09/715,532 Filed: 11/16/2000

Title: 3D CONTROLLER WITH VIBRATION

Applicant's mailing address: Brad A. Armstrong  
P.O. Box 1419  
Paradise, CA 95967

Examiner: \_\_\_\_\_  
Group Art Unit: \_\_\_\_\_

Dear Sir:

REMARKS

This Preliminary Amendment to the above referenced pending patent application is being filed prior to the mailing of first action on the merits.

07/22/2002 NMOHAMM1 0000060 09715532

01 FC:203 9.00 OP  
02 FC:202 420.00 OP

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1)

A Terminal Disclaimer was sent to the PTO on 8/8/01 in a Preliminary Amendment to this application. The Terminal Disclaimer noted the instant application and my earlier U.S. patent 6,222,525. Please do not apply or record that Terminal Disclaimer, as it is not necessary..

Below are:

- A. Amendments to the Specification.
- B. Amendments to the Claims.

Attached is a check in the amount of \$429.00 to cover the Small Entity costs of the additionally added claims.

A

AMENDMENTS TO THE SPECIFICATION; Amendments to the Specification in marked up version wherein brackets show deletion and underlining shows insertion; to the corresponding paragraph on page 1 of the specification, please amend as shown:

CROSS REFERENCE TO RELATED APPLICATIONS AND PATENTS

This application is a continuation-in-part of pending U.S. Non-provisional patent application Serial Number 08/677,378 filed July 5, 1996 of which the positive teachings and disclosures are herein incorporated by reference and the benefits of the filing date claimed. The pending U.S. Application 08/677,378 was filed during the pendency of U.S. application [08/847,619] 07/847,619 filed March 5, 1992 and also makes claim to the benefit of the filing date of the application [08/847,619] 07/847,619, now U.S. Patent 5,589,828. Also herein incorporated by reference for the positive teachings and disclosures therein is U.S. Disclosure Document Number 381081 filed Nov. 22, 1995 which has been placed in the file of U.S. Application 08/677,378. This application is also a continuation-in-part of U.S. patent application serial number [08/847,619] 07/847,619, filed March 5, 1992, now U.S. Patent 5,589,828, of which the positive teachings and disclosures are herein incorporated by reference. This application is a continuation-in-part of pending U.S. application 09/510,572 filed 02/22/00 as a continuation of U.S. patent application serial number 08/942,450, filed Oct. 1, 1997, now U.S. Patent No. 6,102,802 of which the positive teachings and disclosures are herein incorporated by reference and the benefit of the filing date claimed. This application also is a continuation-in-part of U.S. patent application serial number 08/393,459, filed February 23, 1995, now U.S. Patent 5,565,891, which is a continuation-in-part of U.S. patent application serial number [08/847,619] 07/847,619 now U.S. Patent 5,589,828. The instant application claims the benefits under 35 U.S.C 120, where permitted, of the filing dates of the above listed patents and or applications including that of U.S. Patent 5,589,828 filed as an application on March 5, 1992.

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AMENDMENTS TO THE SPECIFICATION in clean version are presented below for use in the application and patent to issue therefrom: (the page 1 of the specification marked up amendment of above is below in clean version)

Sub  
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CROSS REFERENCE TO RELATED APPLICATIONS AND PATENTS

This application is a continuation-in-part of pending U.S. Non-provisional patent application Serial Number 081677,378 filed July 5, 1996 of which the positive teachings and disclosures are herein incorporated by reference and the benefits of the filing date claimed. The pending U.S. Application 08/677,378 was filed during the pendency of U.S. application 071847,619 filed March 5, 1992 and also makes claim to the benefit of the filing date of the application 07/847,619, now U.S. Patent 5,589,828. Also herein incorporated by reference for the positive teachings and disclosures therein is U.S. Disclosure Document Number 381081 filed Nov. 22, 1995 which has been placed in the file of U.S. Application 08/677,378. This application is also a continuation-in-part of U.S. patent application serial number 07/847,619, filed March 5, 1992, now U.S. Patent 5,589,828, of which the positive teachings and disclosures are herein incorporated by reference. This application is a continuation-in-part of pending U.S. application 09/510,572 filed 02/22/00 as a continuation of U.S. patent application serial number 081942,450, filed Oct. 1, 1997, now U.S. Patent No. 6,102,802 of which the positive teachings and disclosures are herein incorporated by reference and the benefit of the filing date claimed. This application also is a continuation-in-part of U.S. patent application serial number 08/393,459, filed February 23, 1995, now U.S. Patent 5,565,891, which is a continuation-in-part of U.S. patent application serial number 07/847,619 now U.S. Patent 5,589,828. The instant application claims the benefits under 35 U.S.C 120, where permitted, of the filing dates of the above listed patents and or applications including that of U.S. Patent 5,589,828 filed as an application on March 5, 1992.

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AMENDMENTS TO THE CLAIMS,

Please cancel claims 1-38. Please insert the following new

then examine all pending claims in view of all of the prior art and find that the claims are allowable. Thank you.

~~1-38~~. A 3-D graphics controller used with a television based game, comprising:

a game, said game at least in part controlled by circuitry, said circuitry located on at least one sheet, said at least one sheet comprising:

a circuit board sheet connected to a flexible membrane sheet;

a first element structured to activate

four unidirectional sensors, said four unidirectional sensors at least in part connected to said at least one sheet, said four unidirectional sensors useful to control said game;

a second element with structure to activate

a first two rotary potentiometers, said first two rotary potentiometers at least in part connected to said at least one sheet, said first two rotary potentiometers useful to control said game;

a third element with structure to activate

a second two rotary potentiometers, said second two rotary potentiometers at least in part connected to said at least one sheet, said second two rotary potentiometers useful to control said game;

an independent first button structured to activate

a first button sensor, said first button depressible by a single finger of a user, said first button sensor at least in part connected to said at least one sheet, said first button sensor creates simple switched On/Off data useful to control said game;

an independent pivotal second button structured to activate

a second button sensor, said second button pivots upon

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depression by a single finger of the user, said second button sensor at least in part connected to said at least one sheet, said second button sensor capable of outputting a proportional signal useful to control said game;

an independent pivotal third button structured to activate a third button sensor, said third button pivotal upon depression by a single finger of the user, said third button sensor at least in part connected to said at least one sheet, said third button sensor capable of outputting a proportional signal useful to control said game;

active tactile feedback vibration detectable by the user of said game.

24b. A 3-D graphics controller used with a television based game according to claim 35 wherein said active tactile feedback vibration is provided by a motor and offset weight.

BZ 34. A 3-D graphics controller for controlling a television based game, comprising:

circuitry located at least in part on at least one sheet, said at least one sheet comprising:  
a circuit board sheet; said circuit board sheet connected with  
a flexible membrane sheet;  
a first element structured to activate four unidirectional sensors, said four unidirectional sensors at least in part connected to said at least one sheet, said four unidirectional sensors useful to control the game;  
a second element with structure to activate a first two rotary potentiometers, said first two rotary potentiometers at least in part connected to said at least one sheet, said first two rotary potentiometers useful to control the game;  
a third element with structure to activate a second two rotary potentiometers, said second two

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rotary potentiometers at least in part connected to said at least one sheet, said second two rotary potentiometers useful to control the game;

an independent first button structured to activate

a first button sensor, said first button depressible by a single finger of a user, said first button sensor at least in part connected to said at least one sheet, said first button sensor creates simple switched On/Off data useful to control the game;

an independent pivotal second button structured to activate

a second button sensor, said second button pivots upon depression by a single finger of the user, said second button sensor at least in part connected to said at least one sheet, said second button sensor capable of outputting a proportional signal useful to control the game;

an independent pivotal third button structured to activate

a third button sensor, said third button pivotal upon depression by a single finger of the user, said third button sensor at least in part connected to said at least one sheet, said third button sensor capable of outputting a proportional signal useful to control the game;

tactile feedback means for providing vibration detectable by the user of the game, said tactile feedback means connected to said circuitry.

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~~442~~. A 3-D graphics controller according to claim ~~41~~<sup>3</sup> wherein said tactile feedback means comprises a motor and offset weight.

~~548~~. A 3-D graphics controller for controlling a television based game, comprising:

circuitry located at least in part on

at least one sheet, said at least one sheet comprising:

a circuit board sheet; said circuit board sheet

connected with

a flexible membrane sheet;

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a first element structured to activate

four unidirectional sensors, said four unidirectional sensors at least in part connected to said at least one sheet, said four unidirectional sensors useful to control the game;

a second element with structure to activate

a first two rotary potentiometers, said first two rotary potentiometers at least in part connected to said at least one sheet, said first two rotary potentiometers useful to control the game;

a third element with structure to activate

a second two rotary potentiometers, said second two rotary potentiometers at least in part connected to said at least one sheet, said second two rotary potentiometers useful to control the game;

an independent first button structured to activate

B2 a first button sensor, said first button depressible by a single finger of a user, said first button sensor at least in part connected to said at least one sheet, said first button sensor creates simple switched On/Off data useful to control the game;

an independent pivotal second button structured to activate

a second button sensor, said second button pivots upon depression by a single finger of the user, said second button sensor at least in part connected to said at least one sheet, said second button sensor capable of outputting a proportional signal useful to control the game;

an independent pivotal third button structured to activate

a third button sensor, said third button pivotal upon depression by a single finger of the user, said third button sensor at least in part connected to said at least one sheet, said third button sensor capable of outputting a proportional signal useful to control the game.

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64. A 3-D graphics controller for controlling a television based game, comprising:

circuitry located at least in part on  
at least one sheet, said at least one sheet comprising:

a circuit board sheet connected to  
a flexible membrane sheet;

a first element structured to activate

four unidirectional sensors, said four unidirectional sensors at least in part connected to said at least one sheet, said four unidirectional sensors useful to control the game;

a second element with structure to activate

a first two rotary potentiometers, said first two rotary potentiometers at least in part connected to said at least one sheet, said first two rotary potentiometers useful to control the game;

a third element with structure to activate

a second two rotary potentiometers, said second two rotary potentiometers at least in part connected to said at least one sheet, said second two rotary potentiometers useful to control the game;

an independent first button structured to activate

a pressure-sensitive first button sensor useful to control the game, said first button depressible by a single finger of a user, said first button sensor at least in part connected to said at least one sheet, said first button sensor capable of outputting a proportional signal representing amount of pressure applied to said first button;

an independent second button structured to activate

a pressure-sensitive second button sensor useful to control the game, said second button depressible by a single finger of the user, said second button sensor at least in part connected to said at least one sheet, said second button sensor capable of outputting a proportional signal representing amount of pressure applied to said second button;

tactile feedback vibration in the controller detectable by

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the user of the game.

745. A 3-D graphics controller according to claim ~~45~~<sup>6</sup> wherein said tactile feedback vibration is supplied by a motor and offset weight.

846. A 3-D graphics controller according to claim ~~46~~<sup>6</sup> wherein said controller further includes an independent third button structured to activate

a third button sensor, said third button depressible by a single finger of the user, said third button sensor at least in part connected to said at least one sheet, said third button sensor creates simple switched On/Off data useful to control the game.

32 947. A 3-D graphics controller for controlling a television based game, comprising:

circuitry located at least in part on  
at least one sheet, said at least one sheet comprising:  
a circuit board sheet connected to  
a flexible membrane sheet;

a first element structured to activate

four unidirectional sensors, said four unidirectional sensors at least in part connected to said at least one sheet, said four unidirectional sensors useful to control the game;

a first rotary potentiometer at least in part connected to said at least one sheet, said first rotary potentiometer useful to control the game;

a second rotary potentiometer at least in part connected to said at least one sheet, said second rotary potentiometer useful to control the game;

a third rotary potentiometer at least in part connected to said at least one sheet, said third rotary potentiometer useful to control the game;

a fourth rotary potentiometer at least in part connected to

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said at least one sheet, said fourth rotary potentiometer useful to control the game;

an independent first button structured to activate

a pressure-sensitive first button sensor useful to control the game, said first button depressible by a single finger of a user, said first button sensor at least in part connected to said at least one sheet, said first button sensor capable of outputting a proportional signal representing amount of pressure applied to said first button;

an independent second button structured to activate

a pressure-sensitive second button sensor useful to control the game, said second button depressible by a single finger of the user, said second button sensor at least in part connected to said at least one sheet, said second button sensor capable of outputting a proportional signal representing amount of pressure applied to said second button;

tactile feedback vibration in the controller detectable by the user of the game.

10 4b. A 3-D graphics controller according to claim 9 wherein said controller further includes an independent third button structured to activate

a third button sensor, said third button depressible by a single finger of the user, said third button sensor at least in part connected to said at least one sheet, said third button sensor creates simple switched On/Off data useful to control the game.

Sub Ck 49. A 3-D graphics controller according to claim 47 wherein said tactile feedback means comprises a motor and offset weight.

12 5b. A 3-D graphics controller used with a television based game, comprising:

a first element structured to activate

four unidirectional sensors, said four unidirectional

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sensors useful to control said game; said four unidirectional sensors at least in part connected to

circuitry;

a second element with structure to activate

a first two rotary potentiometers, said first two rotary potentiometers at least in part connected to said circuitry, said first two rotary potentiometers useful to control said game;

a third element with structure to activate

a second two rotary potentiometers, said second two rotary potentiometers at least in part connected to said circuitry, said second two rotary potentiometers useful to control said game;

an independent first button structured to activate

a first button sensor, said first button depressible by a single finger of a user, said first button sensor at least in part connected to said circuitry, said first button sensor creates simple switched On/Off data useful to control said game;

an independent pivotal second button structured to activate

a second button sensor, said second button pivots upon depression by a single finger of the user, said second button sensor at least in part connected to said circuitry, said second button sensor capable of outputting a proportional signal useful to control said game;

an independent pivotal third button structured to activate

a third button sensor, said third button pivotal upon depression by a single finger of the user, said third button sensor at least in part connected to said circuitry, said third button sensor capable of outputting a proportional signal useful to control said game;

active tactile feedback vibration detectable by the user Of said game, said active tactile feedback vibration provided by

an offset weight connected to

a motor, said motor at least in part connected to said circuitry.

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~~B~~ 51. A 3-D graphics controller used with a television based game, comprising:

- a first element structured to activate four unidirectional sensors, said four unidirectional sensors used to control said game;
- a second element with structure to activate a first two rotary potentiometers, said first two rotary potentiometers used to control said game;
- a third element with structure to activate a second two rotary potentiometers, said second two rotary potentiometers used to control said game;
- an independent first button structured to activate a first button sensor, said first button depressible by a single finger of a user, said first button sensor creates simple switched On/Off data used to control said game;
- B2 an independent pivotal second button structured to activate a second button sensor, said second button pivots upon depression by a single finger of the user, said second button sensor capable of outputting a proportional signal used to control said game;
- an independent pivotal third button structured to activate a third button sensor, said third button pivotal upon depression by a single finger of the user, said third button sensor capable of outputting a proportional signal used to control said game;
- an offset weight is connected to a motor to provide active tactile feedback used to provide vibration to the user of said game.

~~W~~ 2. A 3-D graphics controller used with a television based game, comprising:

- a first element movable on two axes, said first element structured to activate four unidirectional sensors, said four unidirectional

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sensors used to input a first axis and a second axis of control for the game;

a first bi-directional proportional sensor, said first bi-directional proportional sensor used to input a third axis of control for the game;

a second bi-directional proportional sensor, said second bi-directional proportional sensor used to input a fourth axis of control for the game;

a third bi-directional proportional sensor, said third bi-directional proportional sensor used to input a fifth axis of control for the game;

a fourth bi-directional proportional sensor, said fourth bi-directional proportional sensor used to input a sixth axis of control for the game;

an independent first button structured to activate

a first button sensor, said first button depressible by a single finger of the user, said first button sensor capable of outputting a proportional signal used to control the game;

an independent second button structured to activate

a second button sensor, said second button depressible by a single finger of the user, said second button sensor capable of outputting a proportional signal used to control the game;

a sheet connecting to at least eight of the sensors.

15 5/3. A 3-D graphics controller used with a television based game, comprising:

a housing;

a first element structured to activate four unidirectional sensors used to control a television based game, said first element supported at least in part by said housing and sufficiently exposed to allow two axes of input;

a second element structured to activate a first two bi-directional proportional sensors used to control the game, said second element supported at least in part by said housing;

a third element structured to activate a second two bi-

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directional proportional sensors used to control the game, said third element supported at least in part by said housing;

an independent first button sensor, said first button sensor depressible by a single finger of a user, said first button sensor creates simple switched On/Off data used to control the game, said independent first button sensor at least in part connected to

a sheet;

an independent pivotal second button structured to activate a second button sensor, said second button pivots upon depression by a single finger of the user, said second button sensor at least in part connected to said sheet, said second button sensor capable of outputting a proportional signal used to control the game;

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an independent pivotal third button structured to activate a third button sensor, said third button pivotal upon depression by a single finger of the user, said third button sensor at least in part connected to said sheet, said third button sensor capable of outputting a proportional signal used to control the game;

active tactile feedback vibration detectable by the user of the game, said active tactile feedback vibration provided by an offset weight connected to a motor, said motor supported within said housing.

16. A 3-D graphics controller for controlling a television based game, comprising:

a first element structured to activate four unidirectional sensors, said four unidirectional sensors useful to control the television based game; said four unidirectional sensors at least in part connected to

a first sheet;

a second element structured to activate a first two bi-directional proportional sensors, said first two bi-directional proportional sensors at least in part connected to said first

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sheet, said first two bi-directional sensors useful to control the television based game;

a third element structured to activate a second two bi-directional proportional sensors, said second two bi-directional proportional sensors useful to control the television based game; said second two bi-directional proportional sensors at least in part connected to

a second sheet, said first sheet located on a first plane, and said second sheet located on a second plane;

an independent first button sensor, said first button sensor depressible by a single finger of the user, said first button sensor at least in part connected to said first sheet, said first button sensor capable of transforming depression into a proportional signal useful to control the television based game;

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an independent second button sensor, said second button sensor depressible by a single finger of the user, said second button sensor at least in part connected to said first sheet, said second button sensor capable of transforming depression into a proportional signal useful to control the television based game;

tactile feedback means for providing vibration detectable by the user of said electronic game, said tactile feedback means supported within said controller.

17. 75. A 3-D graphics controller for controlling a game, comprising:

a first element structured to activate four unidirectional sensors, said four unidirectional sensors useful to control a game; said four unidirectional sensors at least in part connected to

a first sheet;

a second element structured to activate a first two bi-directional proportional sensors, said first two bi-directional proportional sensors at least in part connected to said first sheet, said first two bi-directional sensors useful to control

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the game;

a third element structured to activate a second two bi-directional proportional sensors, said second two bi-directional sensors useful to control the game; said second two bi-directional proportional sensors at least in part connected to a second sheet, said first sheet located on a first plane, and said second sheet located on a second plane within said controller;

an independent first button, said first button depressible by a single finger of the user, said first button positioned to activate a first proportional sensor and said first button positioned to activate a simple switched On/Off sensor useful to control the game; said first proportional sensor connected to said first sheet, said first proportional sensor capable of transforming depression of said first button into a proportional signal useful to control said electronic game;

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an independent second button, said second button depressible by a single finger of the user, said second button positioned to activate a second proportional sensor and said second button positioned to activate a simple switched On/Off sensor useful to control said electronic game; said second proportional sensor connected to said first sheet, said second proportional sensor capable of transforming depression of said second button into a proportional signal useful to control said electronic game;

tactile feedback means for providing vibration detectable by the user of said electronic game, said tactile feedback means supported within said controller.

~~18. 56.~~ A 3-D graphics controller according to claim ~~55~~ wherein the first and the second proportional sensors are each unidirectional sensors.

Sub D1

~~19. 57.~~ A controller structured for allowing manual inputs to rotate a platform on two mutually perpendicular axes, the rotation translated into electrical signals by four

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unidirectional sensors associated with the platform, the signals at least in part useful for controlling objects and navigating a viewpoint, the controller including a vibrator for providing vibration detectable by a human user inputting to the controller; the unidirectional sensors including spacing preventing false activation by the vibration.

<sup>19</sup>  
~~20~~ 58. A controller according to claim ~~57~~ wherein said controller further has a plurality of independent depressible buttons, said buttons structured to activate button sensors, said button sensors output electrical signals proportionate to depression of said buttons.

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<sup>20</sup>  
~~21~~ 59. A controller according to claim ~~58~~ wherein said button sensors also output On/Off data.

<sup>21</sup>  
~~22~~ 60. A controller according to claim ~~59~~ wherein additional independently depressible buttons output only On/Off data.

<sup>20</sup>  
~~23~~ 61. A controller according to claim ~~58~~ wherein said controller further includes a second element movable on two perpendicular axes, said second element structured and positioned to activate two bi-directional proportional sensors.

<sup>20</sup>  
~~24~~ 62. A controller according to claim ~~58~~ wherein said two bi-directional proportional sensors are rotary potentiometers.

Sub D2

~~25~~ 63. A hand operated controller structured for allowing hand inputs rotating a platform on two mutually perpendicular axes to be translated into electrical outputs by four unidirectional sensors to allow controlling objects and navigating a viewpoint, said unidirectional sensors including spacing generally preventing false activation through vibration, the controller including a tactile feedback means for providing vibration detectable by the user through the hand operating the controller;

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a second element movable on two mutually perpendicular axes, said second element structured to activate two bi-directional proportional sensors for providing outputs at least in part useful for controlling objects and navigating a viewpoint;

a third element movable on two mutually perpendicular axes, said second element structured to activate two bi-directional proportional sensors for providing outputs at least in part useful for controlling objects and navigating a viewpoint;

a plurality of independent finger depressible buttons, each button associated with

a button sensor, said button sensor outputs at least On/Off data.

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~~26~~ 24. A hand operated Controller according to claim ~~53~~<sup>25</sup> wherein the sensors are connected by at least one sheet.

~~27~~ 25. A hand operated controller according to claim ~~54~~<sup>26</sup> wherein said at least one sheet comprises a flexible membrane sheet connected to a substantially rigid circuit board sheet.

~~28~~ 26. A hand operated controller according to claim ~~55~~<sup>27</sup> wherein said button sensor outputs data proportionate to depression of one of said buttons.

~~29~~ 27. A hand operated controller according to claim ~~56~~<sup>28</sup> wherein the bi-directional proportional sensors are rotary potentiometers.

~~30~~ 28. A hand operated controller according to claim ~~57~~<sup>29</sup> wherein the bi-directional proportional sensors are optical encoders.

~~31~~ 29. A hand operated controller according to claim ~~58~~<sup>30</sup> wherein said tactile feedback means comprises a motor and offset weight.

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Sub D3

<sup>32</sup> 32.76. A hand operated controller structured for allowing hand inputs rotating a platform on two mutually perpendicular axes to be translated into electrical outputs, the controller structured with four unidirectional sensors to allow controlling objects and navigating a viewpoint, said unidirectional sensors including spacing generally preventing false activation through vibration, the controller including an electro-mechanical tactile feedback means for providing vibration detectable by the user through the hand operating the controller;

a second element movable on two mutually perpendicular axes, said second element structured to activate two bi-directional proportional sensors;

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a third element movable on two mutually perpendicular axes, said second element structured to activate two bi-directional proportional sensors;

a plurality of independent finger depressible buttons, each button associated with

a button sensor, said button sensor outputs at least On/Off data;

the sensors are connected by at least one sheet, said at least one sheet comprises

a flexible membrane sheet connected to a circuit board sheet.

<sup>33</sup> 33. A hand operated controller according to claim <sup>32</sup> wherein said button sensor outputs data proportionate to depression of one of said buttons.

<sup>33</sup> 34. A hand operated controller according to claim <sup>33</sup> wherein at least two of said buttons pivot upon depression to activate their respective proportional sensors.

<sup>35</sup> 35. A hand operated controller according to claim <sup>34</sup> wherein the bi-directional proportional sensors are rotary

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potentiometers.

~~26~~<sup>34</sup>. A hand operated controller according to claim ~~22~~<sup>34</sup> wherein the bi-directional proportional sensors are optical encoders.

~~24~~<sup>33</sup>. A hand operated controller according to claim ~~24~~<sup>33</sup> wherein said tactile feedback means comprises a motor and offset weight.

~~30~~<sup>38</sup>. A 3-D graphics controller having an economical combination of elements and buttons allowing a user to control a television based game, the controller comprising:

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a housing;

a first element structured to activate four unidirectional sensors used to control a television based game, said first element supported at least in part by said housing and sufficiently exposed to allow two axes of input;

a second element structured to activate a first two rotary potentiometers used to control the game;

a third element structured to activate a second two rotary potentiometers used to control the game;

a circuit board supporting circuitry, said circuit board located in said housing, the rotary potentiometers mounted to said circuit board;

an independent first button structured to activate

a first button sensor, said first button depressible by a single finger of the user, said first button sensor at least in part supported by said housing, said first button sensor capable of outputting a proportional signal used to control the game;

an independent second button structured to activate

a second button sensor, said second button depressible by a single finger of the user, said second button sensor at least in part supported by said housing, said second button sensor capable of outputting a proportional signal used to control

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the game;

active tactile feedback structure located in said housing.

B2 ~~31~~ 71. A 3-D graphics controller according to claim ~~76~~ <sup>38</sup> wherein  
said active tactile feedback structure includes  
an offset weight connected to  
a motor.

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7.5

B



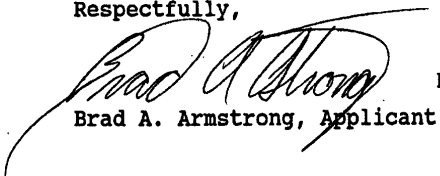
REMARKS

Please examine my application as amended and find that all claims are allowable. Thank you.

Also, please do not hesitate to telephone me at 775 721 6958 if I may be of any assistance in advancing this application toward issuance.

I, Brad A. Armstrong, believe I am the original, first and sole inventor of the subject matter which is now claimed and for which a patent is sought in the instant application. I hereby declare that no new matter has been added by amendment and 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 or any patent issued thereon.

Respectfully,

  
Brad A. Armstrong, Applicant

Date: 7-15-02

B