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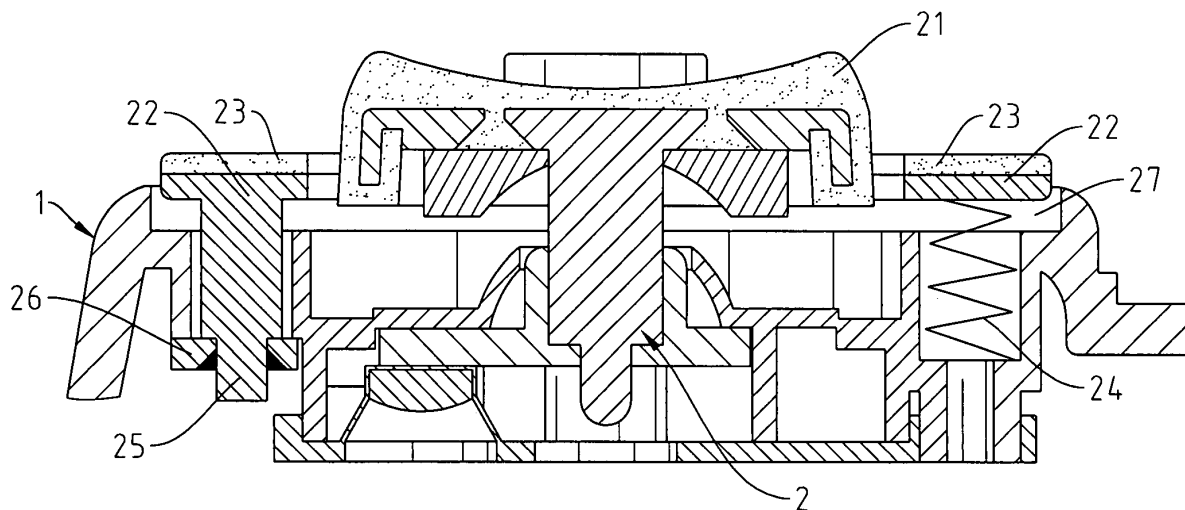
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(54) **Buffering protective handheld controller**

(57) A buffering protective handheld controller, mainly with a buffering protective configuration for direction button and a number of functional buttons on one side of the main unit. The user is allowed to have greater touch area and more comfortability when pressing the button. In addition, under a long period of button-pressing time, the user has finger contact with surrounding buffering devices to reduce pressure. It composes a

multiple-layer cushion as a protective mechanism. Further, the handheld main unit has the rigid plastic base in an appropriate hollow shape, which may be enclosed by a sticking soft pad with a proper size. Thus, it can provide a cushion air-bag effect and fits the user's palm in any shape and any size. Particularly, because the user can hold the unit with a firm grasp by fingers, the grasping force is minimized during use.



**Fig. 2**

## Description

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

**[0001]** The present invention is related to a handheld controller, especially a configuration that provides buffering protection.

#### 2. Description of the Related Art

**[0002]** Current handheld controllers use plastic material to make the touch buttons on the main unit. However, under a long period of pressing time, the rigid plastic material around the button makes the user feel discomfort due to an opposite force. Usually this results in ache, blistering, callus, or finger deformation, as the worst. Besides, because the handheld part of the main unit is made of injection molded ABS or rigid plastics, the user feels discomfort at the holding hands. Therefore, the comfortability of current handheld controller needs to be improved.

### SUMMARY OF THE INVENTION

**[0003]** The inventor realized the need of an improved handheld controller in comfortability and invented a buffering protective handheld controller.

**[0004]** The main objective of the invention is to provide a handheld controller that provides buffering protection. Mainly, it provides a buffering protective configuration for direction button and a number of functional buttons on one side of the main unit. The user is allowed to have greater touch area and more comfortability when pressing the button. Especially, under a long period of button-pressing time, the user has finger contact with surrounding buffering devices to reduce pressure. Therefore, the invention can provide fatigue reduction, blistering prevention and benefits like finger protection from callus and deformation.

**[0005]** Another objective of the invention is to provide a buffering protective handheld controller which main unit has the handheld base in a hollow shape and enclosed by a sticking soft pad with a proper size. Thus, it can provide a cushion air-bag effect to fit the user's palm in any shape and any size. Particularly, because the user can hold the unit with a firm grasp by fingers, the grasping force is significantly minimized during use. The invention further provides the handheld controller with the most grasping comfort.

### BRIEF DESCRIPTION OF THE DRAWINGS

#### **[0006]**

Figure 1 is an illustration of the appearance of the invention.

Figure 2 is an illustration of the A-A crosssectional view of the invention.

Figure 3 is an illustration of the B-B crosssectional view of the invention.

Figure 4 is an illustration of the crosssectional view of another buffering device for the functional button of the present invention.

Figure 5 is an illustration of the C-C crosssectional view of the invention.

Figure 6 is an illustration of the side view of the base of the handheld main unit for the present invention.

Figure 7 is an illustration of the top view of the base of the handheld main unit for the present invention.

### DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENT

**[0007]** Please refer to Figure 1. The buffering protective handheld controller in the present invention is mainly to provide a buffering protective configuration for direction button **2** and a number of functional buttons **3** on one side of the main unit **1**.

**[0008]** As shown in Figure 2, the surface of the directional buttons **2** is covered by an elastic ring **22**, which is a layer of soft protective pad **23**. Further, the bottom of the elastic ring **22** is held by a number of buffering devices **24**. The buffering devices **24** can be flexible rubber, spring... etc. to reduce holding pressure (a spring in the Figure). A number of molded axles **25** at the bottom connect with an elastic pad **26**. Thus, the elastic ring **22** is allowed to move around the top of a slot **27** and avoids jumping off the main unit **1**.

**[0009]** When the user presses the directional button **2** for direction control, the user can acquire better comfortability by direct hand pressing on the protective pad **21** that covers the directional buttons **2**. Especially, before the user's hand presses the directional buttons **2** to the bottom, it feels the touch on the protective pad **23** on the elastic ring **22** around the directional buttons **2**. This not only provides a greater touch area but also pressure reduction by a multiple sets of buffering devices **24** at the bottom of the elastic ring **22** and cushion action on a number of axles **25** and washers **26**. In this way, the user is under a multiple protection from top to bottom, which includes the protective pad **21** on top of the directional button **2**, the elastic ring **22** moving around in the middle to reduce pressure, and bottom cushion composed of buffering devices **24**, axles **25** and washers **26**. Such a handheld controller not only has the most comfortability but also reduced holding pressure. Furthermore, the invention can provide fatigue reduction, blistering prevention and benefits like finger protection from callus and deformation.

**[0010]** As shown in Figure 3 and Figure 4, the multiple number of functional buttons **3** have a buffering device, which can be an elastic silicone bushing **31** (as shown in Figure 3). On the top of the bushing **31**, a through-hole **311** of a height **h** is to incorporate the functional

button 3. By increasing the through-hole height, we can increase the pressure reduction for the functional button 3. Or the buffering device can be a hollow silicone elastic pin 32 (as shown in Figure 4), which connects to the bottom of functional buttons 3 against the bushing 31. The elastic pin 32 enhances the pressure reduction for the functional buttons 3. On the other hand, as shown in Figure 5, around the functional buttons 3, there are elastic rings 33 that surface is covered by soft protective pad 34. The elastic ring 33 is held by a multiple number of buffering devices 35, which can be soft rubber, spring...etc. to alleviate the pressure (spring in the Figure). A multiple sets of molded axles 36 at its bottom all connect to a elastic washer 37 and are covered by a spring 39, so the elastic ring 33 can float around the top of the slot 38 and avoid jumping off the main unit 1.

[0011] When the user presses the functional button 3, the buffering device at the bottom of the functional button 3 can provide comfort operability by reducing the pressure on user's hands. Besides, when the user's hand presses the functional button 3 to the bottom, the touch action is on the protective pad 34 of the top of the elastic ring 33 around the functional button 3. It not only enlarges the touch area but also reduces pressure by the multiple number of buffering devices 35 at the bottom of the elastic ring 33 and the pressure reduction mechanism through a number of axles 36 and washers 37. In this way, the user is under a multiple protection from top to bottom, which includes the buffering device at the bottom of the functional button 3, the elastic ring 33 moving around in the middle to reduce pressure, and bottom cushion composed of buffering devices 35, axles 36 and washers 37. The invention that reduces the button holding pressure can provide fatigue reduction, blistering prevention and benefits like finger protection from callus and deformation.

[0012] Further, as in Figure 6 and Figure 7, the handheld portion of the base 11 of the main unit 1 in the invention is in a proper design of a hollow hole 111, which may be enclosed by a sticking soft pad 112 with a proper size. Thus, it can provide a cushion air-bag function to fit the user's palm in any shape and any size. Particularly, because the user can hold the unit with a firm grasp by fingers, the grasping force is greatly minimized during use. Such a handheld controller not only has the most comfortability but also reduced holding pressure.

[0013] To summarize on the above description, the buffering protective handheld controller provided in the present invention is mainly an unit with a buffering protective configuration for direction button and a number of functional buttons on one side of the main unit. Thus, the user is allowed to have greater touch area and more comfortability when pressing the button. In addition, under a long period of button-pressing time, the user has finger contact with surrounding buffering devices to reduce pressure. Further, the handheld main unit has the rigid plastic base in an appropriate hollow shape, which may be enclosed by a sticking soft pad with a proper

size. Thus, it can provide a cushion air-bag function and fits the user's palm in any shape and any size. Particularly, because the user can hold the unit with a firm grasp by fingers, the grasping force is minimized during use. Such a handheld controller not only has the most comfortability but also reduced holding pressure. Therefore, the invention can provide fatigue reduction, blistering prevention and benefits like finger protection from callus and deformation. This invention is considered to have great industrial applicability and progressiveness.

## Claims

1. A buffering protective handheld controller, mainly with a buffering protective configuration for direction button and a number of functional buttons on one side of the main unit; said the surface of the directional button is covered by a soft protective pad and surrounded by an elastic ring that is enclosed in a layer of soft protective pad; said the bottom of the elastic ring is held by a multiple number of buffering devices; said the multiple molded axles all connect to an elastic ring at the bottom, so the elastic ring can float around the top of the slot and avoid jumping off the main unit;

at the bottom of the functional buttons, it adds buffering devices to enhance the pressure reduction when the button is pressed; besides, there is an elastic ring around the functional buttons; said the elastic ring surface is covered by soft protective pad and is held by a multiple number of buffering devices at the bottom, where a number of molded axles connect to an elastic washer, so the elastic ring is limited to float around the top of the slot and avoids jumping off the main unit;

the handheld rigid plastic portion of the main unit base is in a hollow shape, which is enclosed by a sticking soft pad;

through this, when the user presses the button, the user can hold the unit with a firm grasp by fingers, the grasping force is minimized during use; when the user's hand presses the functional button or the directional button to the bottom, the touch action is on the soft protective elastic rings around the buttons; this not only provides a greater touch area but also pressure reduction by a multiple sets of buffering devices at the bottom of the elastic ring and cushion action on a number of axles and washers; in this way, the user is under a multiple protection from top to bottom.

2. As described in Claim 1 for a buffering protective controller, the buffering devices at the bottom of the functional buttons can be elastic silicone bushing

with a through-hole at a certain height on its top to incorporate the functional button. By increasing the through-hole height, we can increase the pressure reduction for the functional button.

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3. As described in Claim 1 for a buffering protective controller, the bottom of the functional button there is a hollow elastic silicone pin to hold the bottom of the bushing. With this elastic pin, pressure alleviation is enhanced.

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4. As described in Claim 1 for a buffering protective controller, the buffering devices can be any pressure reducing devices like soft rubber, spring...etc.

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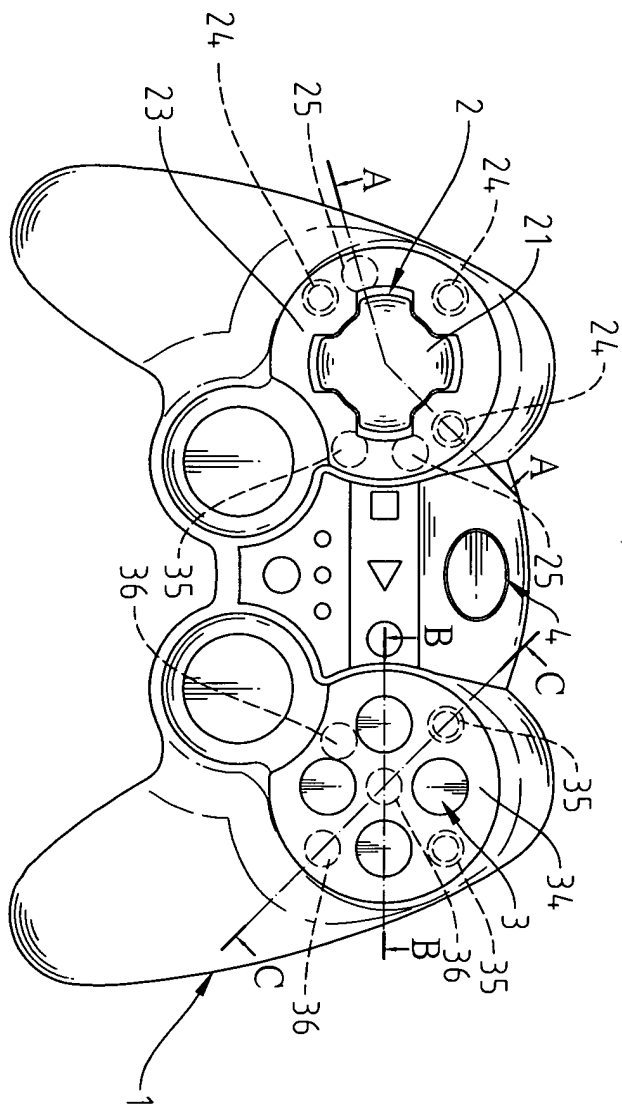


Fig. 1

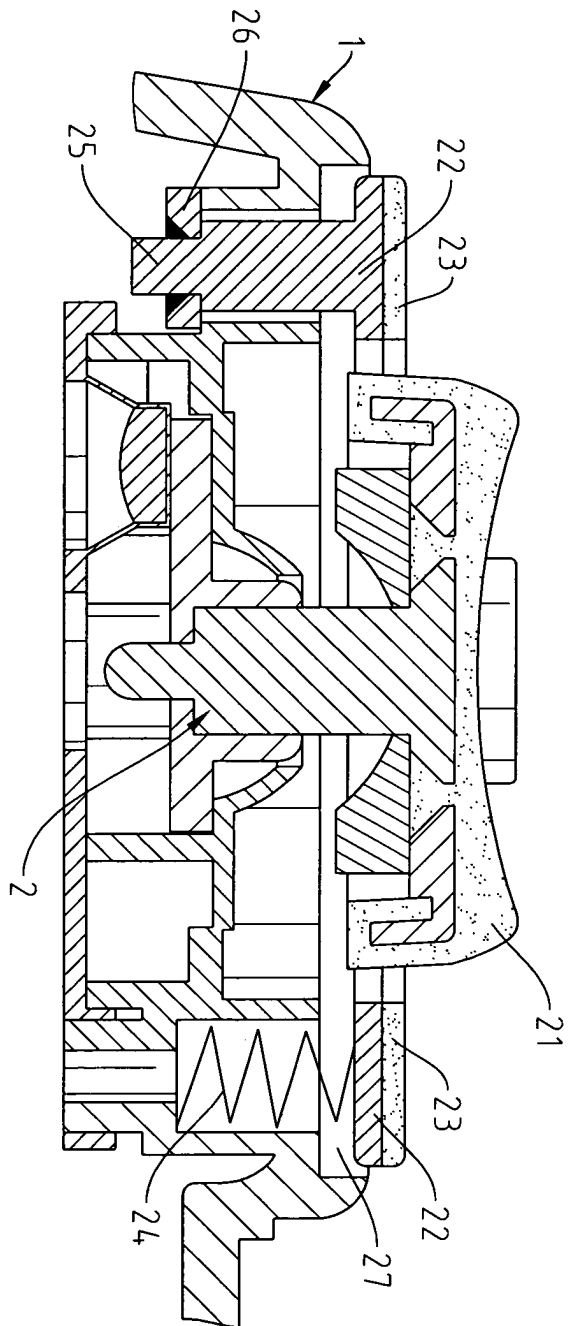


Fig. 2

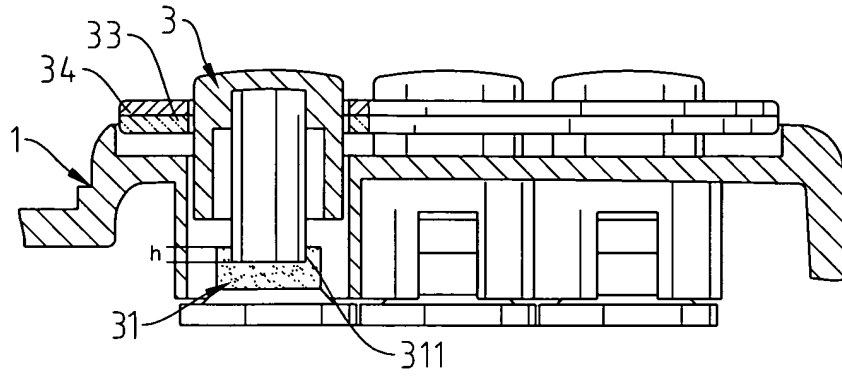


Fig. 3

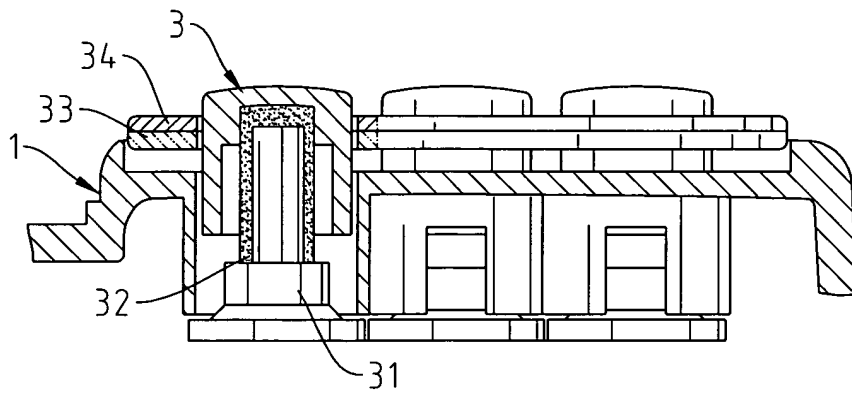


Fig. 4

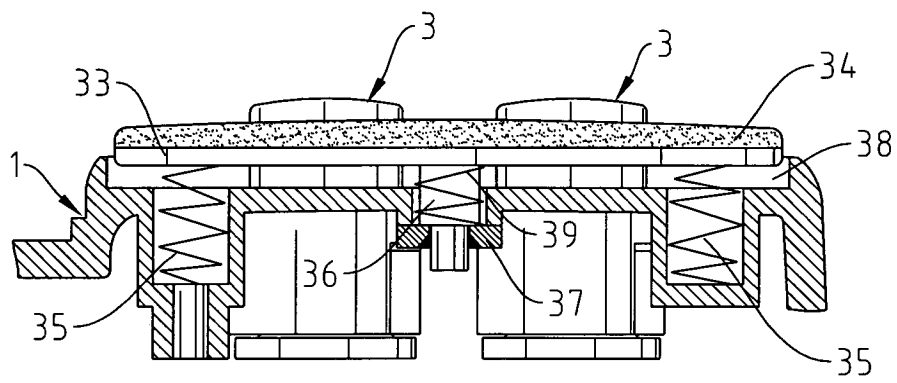


Fig. 5

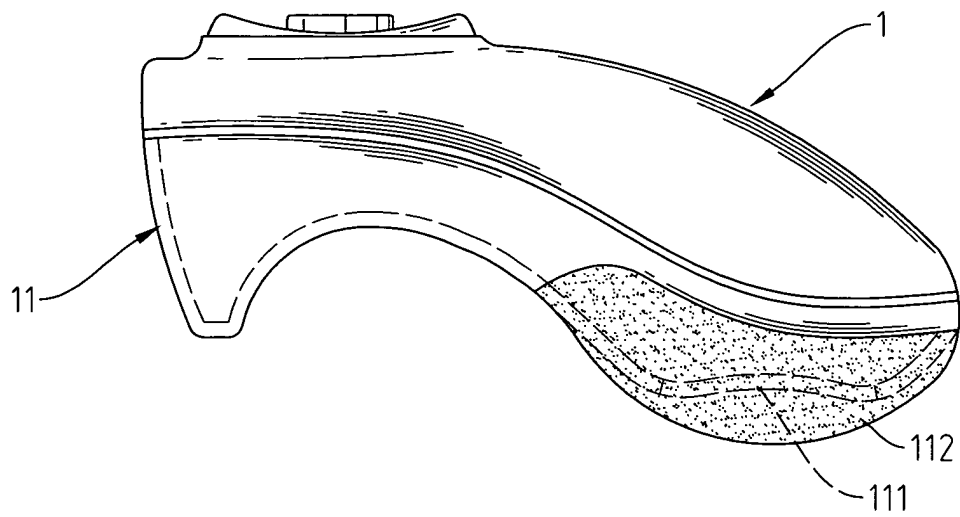


Fig. 6

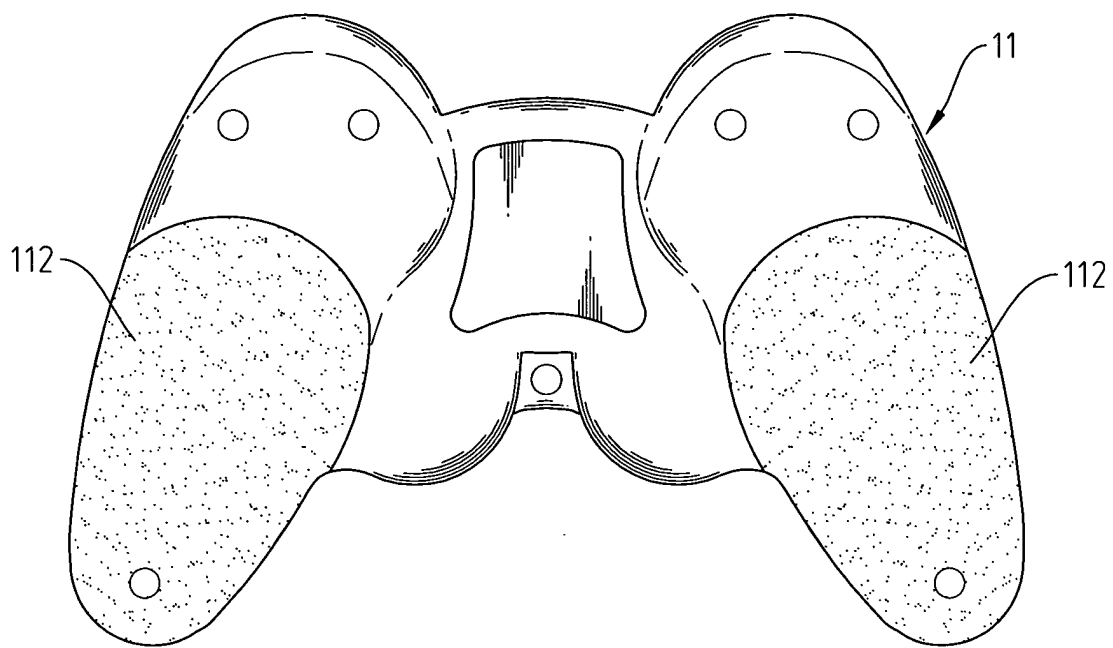


Fig. 7



European Patent  
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Application Number  
EP 04 00 1665

| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                     |                                                                               |                                                                                                                                                                                                                                                                                       |                                              |
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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