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(54) HANDLE ASSEMBLY HAVING LOCK
MECHANISM

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(57) ABSTRACT

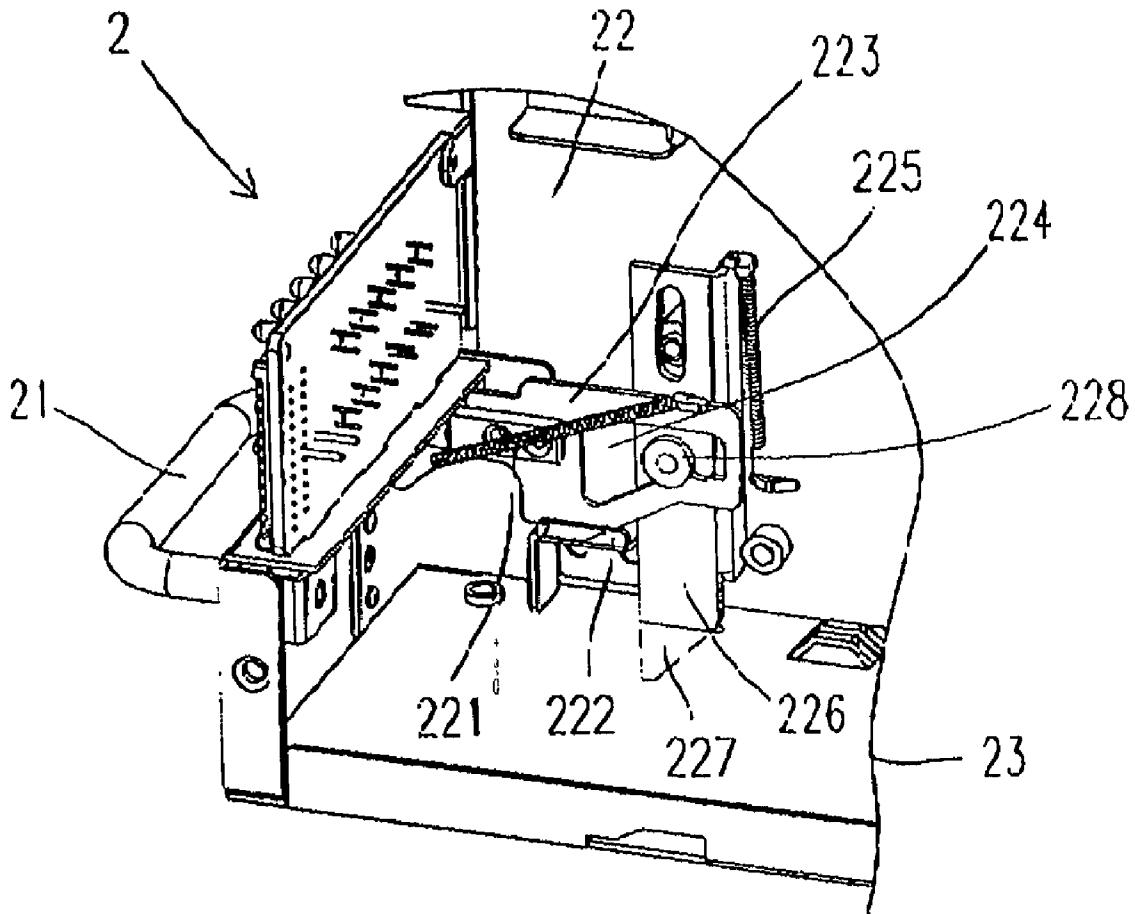
A handle assembly having a lock mechanism is disclosed. The handle assembly includes a handle grip member movably coupled to the casing for receiving a first external force and a second external force, and a lock mechanism installed in the casing and coupled with the handle grip member for locking the handle grip member when the handle grip member receives the first external force and unlocking the handle grip member when the handle grip member receives the second external force.

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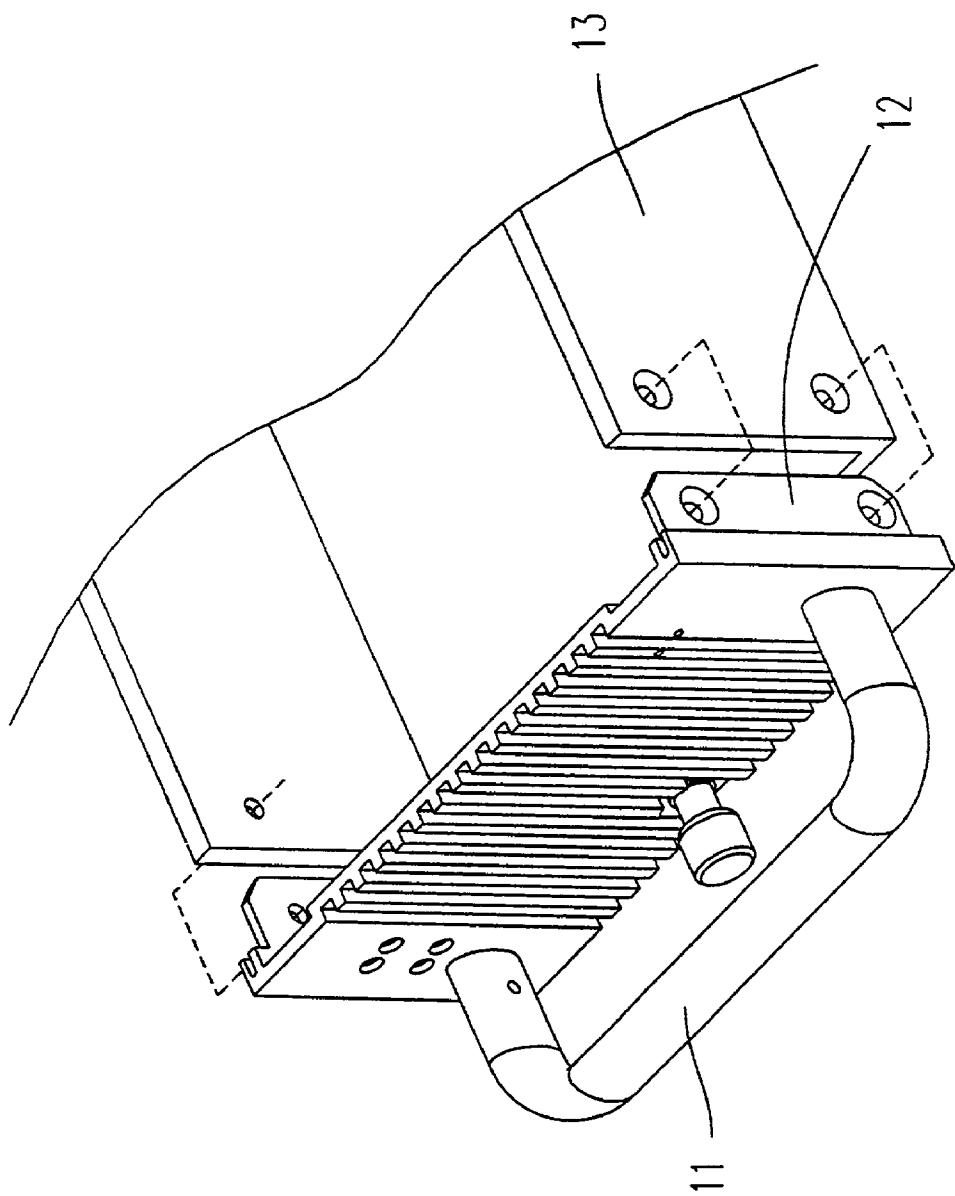


Fig. 1

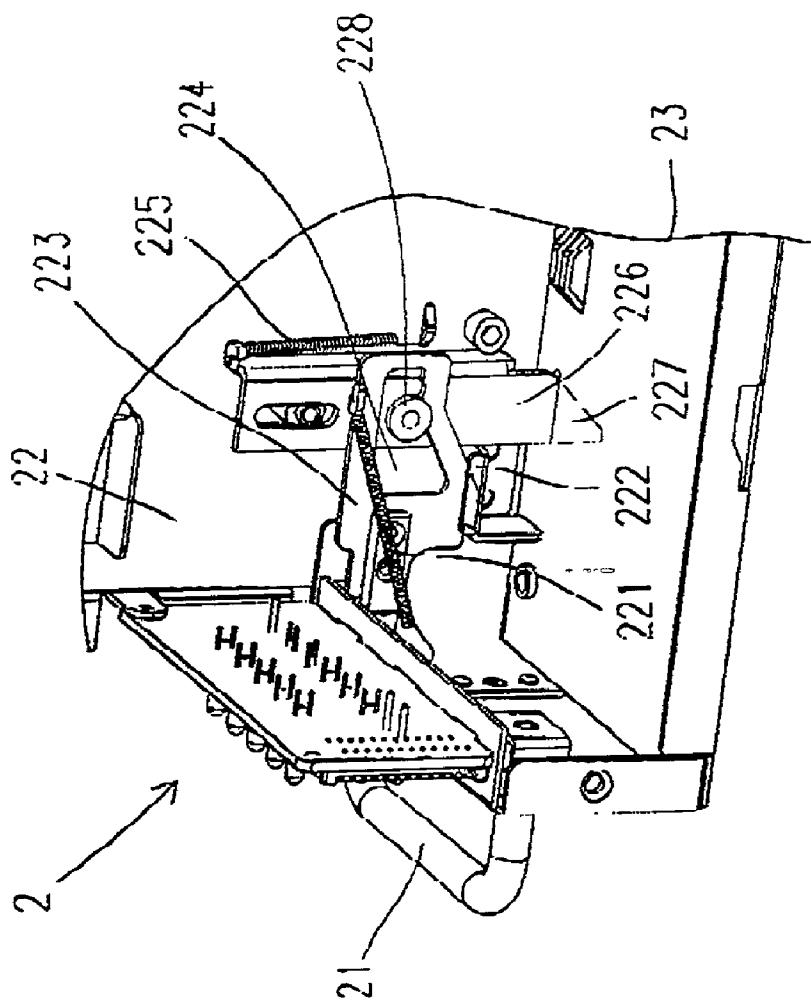


Fig. 2

HANDLE ASSEMBLY HAVING LOCK MECHANISM

FIELD OF THE INVENTION

[0001] The present invention relates to a handle assembly, and more particularly to a handle assembly including a lock mechanism.

BACKGROUND OF THE INVENTION

[0002] The design of a handle assembly applied to a retractable appliance is needed to facilitate the appliance pulled out of an equipment assembly. The schematic view of a traditional handle assembly coupled to an appliance is shown in FIG. 1. The handle grip member 11 is affixed directly to the panel 12 of the appliance 13 by screws, and the handle grip member 11 is not movable. In addition, the appliance 13 is affixed to the equipment assembly by screws. For example, the equipment assembly is a system frame when the appliance 13 is a power module. There are some drawbacks in the previous handle assembly coupled to an appliance. One of the drawbacks is that the panel 12 and the appliance 13 are applied external force indirectly, so it requires strenuous effort to pull the appliance 13 out of the equipment assembly, and another drawback is that the screws affixing the appliance 13 to the equipment assembly should be removed before pulling the appliance 13 out of the equipment assembly.

[0003] In order to overcome the drawbacks described above in the prior art, the present invention provides a handle apparatus including a lock mechanism.

SUMMARY OF THE INVENTION

[0004] It is therefore an object of the present invention to provide a handle assembly adapted to be used in an appliance, wherein the appliance has a casing.

[0005] The handle assembly includes a handle grip member movably coupled to the casing for receiving a first external force and a second external force, and a lock mechanism installed in the casing and coupled with the handle grip member for locking the handle grip member when the handle grip member receives the first external force and unlocking the handle grip member when the handle grip member receives the second external force.

[0006] In accordance with the present invention, the lock mechanism includes a first spring disposed in the casing for extension and compression responding to the first external force and the second external force, a second spring disposed in the casing for extension and compression responding to the first external force and the second external force, a supporting member having a slot thereon and positioned in the casing, a sliding member having one end coupled to the handle grip member and slidably disposed adjacent to the first spring in the casing for sliding and lodging in the slot of the supporting member when the handle grip member receives the first external force and for leaving the slot of the supporting member when the handle grip member receives the second external force, and an engaging member having a cylinder mounted thereon and positioned between the second spring and the sliding member in the casing for engaging with the second spring and the sliding member.

[0007] In addition, the sliding member has a receptacle thereon for engaging with the cylinder mounted on the

engaging member. The engaging member further has a protruding portion which can project from an aperture in the bottom of the casing for completely locking the handle grip member when the handle grip member receives the first external force and draw away from the aperture of the casing for completely unlocking the handle grip member when the handle grip member receives the second external force.

[0008] It is another object of the present invention to provide a lock mechanism adapted to be used in an appliance having a casing to be coupled with an article movably coupled to the casing for locking the object when the article receives a first external force and unlocking the object when the article receives a second external force.

[0009] In accordance with the present invention, the lock mechanism includes a first spring for extension and compression responding to the first external force and the second external force, a second spring for extension and compression responding to the first external force and the second external force, a supporting member having a slot thereon, a sliding member having one end coupled to the article and slidably disposed adjacent to the first spring for sliding and lodging in the slot of the supporting member when the article receives the first external force and for leaving the slot of the supporting member when the article receives the second external force, and an engaging member having a cylinder mounted thereon and positioned between the second spring and the sliding member for engaging with the second spring and the sliding member.

[0010] In addition, the sliding member has a receptacle thereon for engaging with the cylinder mounted on the engaging member. The engaging member further has a protruding portion which can project from an aperture of the article for completely locking the article when the article receives the first external force and draw away from the aperture of the article for completely unlocking the article when the article receives the second external force.

[0011] Preferably, the article is a handle grip.

[0012] It is another object of the present invention to provide an appliance assembly.

[0013] In accordance with the present invention, the appliance assembly includes a casing having an aperture thereon, a handle grip member movably coupled to the casing for receiving a first external force and a second external force, and a lock mechanism installed in the casing and coupled with the handle grip member for locking the handle grip member when the handle grip member receives the first external force and unlocking the handle grip member when the handle grip member receives the second external force.

[0014] In accordance with the present invention, the lock mechanism includes a first spring disposed in the casing for extension and compression responding to the first external force and the second external force, a second spring disposed in the casing for extension and compression responding to the first external force and the second external force, a supporting member having a slot thereon and positioned in the casing, a sliding member having one end coupled to the handle grip member and slidably disposed adjacent to the first spring in the casing for sliding and lodging in the slot of the supporting member when the handle grip member receives the first external force and for leaving the slot of the supporting member when the handle grip member receives the second external force.

the second external force, and an engaging member having a cylinder mounted thereon and positioned between the second spring and the sliding member in the casing for engaging with the second spring and the sliding member.

[0015] In addition, the sliding member has a receptacle thereon for engaging with the cylinder mounted on the engaging member. The engaging member further has a protruding portion which can project from the aperture of the casing for completely locking the handle grip member when the handle grip member receives the first external force and draw away from the aperture of the casing for completely unlocking the handle grip member when the handle grip member receives the second external force.

[0016] In addition, the aperture is in the bottom of the casing.

[0017] Certainly, the appliance assembly could be a retractable power module.

[0018] The present invention may best be understood through the following descriptions with reference to the accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWING

[0019] FIG. 1 is a schematic view showing a traditional handle assembly; and

[0020] FIG. 2 is a schematic view showing the handle assembly according to the preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] A handle assembly according to the preferred embodiment of the present invention is coupled to the appliance 23 and described with the reference to FIG. 2, which is a schematic view of the handle assembly.

[0022] Referring to FIG. 2, the handle assembly 2 includes a handle grip member 21 and a lock mechanism 22. The handle grip member 21 is retractable because the handle grip member 21 is locked or unlocked by the lock mechanism 22.

[0023] When the user applies a first external force to push the handle grip member 21 inward to the appliance, the sliding member 223 slides and the engaging member 226 moves downward subsequently. In the meanwhile, the first spring 221 and the second spring 225 apply force on the sliding member 223, so the sliding member 223 lodges in the slot of the supporting member 222. Then, the cylinder 328 of the engaging member 226 is limited in the receptacle 224 of the sliding member; therefore, the handle grip member 21 is positioned. In addition, a protruding portion 227 of the engaging member 226 receives the force from the second spring 225 to project from the aperture of the appliance. Accordingly, the handle grip member 21 is locked completely.

[0024] When the handle grip member 21 is positioned and locked, the user applies a second external force to push the handle grip member 22 downward. In the meantime, the sliding member 223 slides upward owing to leverage, and the sliding member 223 leaves the slot of the supporting member 222. Subsequently, the first spring 221 makes the

cylinder 328 move along the inclined plane of the receptacle 224. Therefore, the engaging member 226 moves upward, and then the handle grip member 21 is unlocked.

[0025] Preferably, the appliance 22 according to the present invention is a retractable power module and the equipment assembly is a system frame.

[0026] The handle assembly of the present invention is very useful for retracting the appliance out of an equipment assembly. When the user pushes the handle grip member inward to the appliance, the handle grip member is locked and the appliance is engaged with the equipment assembly. When the user pushes the handle grip member downward, the handle grip member is unlocked and the appliance could be pulled out of the equipment assembly. The handle assembly according to the present invention is integrated with the appliance, so it does not require strenuous effort for the users to pull the appliance out of the equipment assembly. Furthermore, the handle assembly including a lock mechanism according to the present invention could be used for preventing the appliance from falling out of the equipment assembly due to careless collision.

[0027] While the invention has been described in terms of what are presently considered to be the most practical and preferred embodiments, it is to be understood that the invention need not be limited to the disclosed embodiment. On the contrary, it is intended to cover various modifications and similar arrangements included within the spirit and scope of the appended claims which are to be accorded with the broadest interpretation so as to encompass all such modifications and similar structures. Therefore, the above description and illustration should not be taken as limiting the scope of the present invention which is defined by the appended claims.

What is claimed is:

1. A handle assembly for using in an appliance, wherein said appliance has a casing, comprising:

a handle grip member movably coupled to said casing for receiving a first external force and a second external force; and

a lock mechanism installed in said casing and coupled with said handle grip member for locking said handle grip member when said handle grip member receives said first external force and unlocking said handle grip member when said handle grip member receives said second external force.

2. The handle assembly according to claim 1, wherein said lock mechanism comprises:

a first spring disposed in said casing for extension and compression responding to said first external force and said external second force;

a second spring disposed in said casing for extension and compression responding to said first external force and said external second force;

a supporting member having a slot thereon and positioned in said casing;

a sliding member having one end coupled to said handle grip member and slidably disposed adjacent to said first spring in said casing for sliding and lodging in said slot of said supporting member when said handle grip

member receives said first external force and for leaving said slot of said supporting member when said handle grip member receives said second external force; and

an engaging member having a cylinder mounted thereon and positioned between said second spring and said sliding member in said casing for engaging with said second spring and said sliding member.

3. The handle assembly according to claim 2, wherein said sliding member has a receptacle thereon for engaging with said cylinder mounted on said engaging member.

4. The handle assembly according to claim 2, wherein said engaging member further has a protruding portion which can project from an aperture in the bottom of said casing for completely locking said handle grip member when said handle grip member receives said first external force and draw away from said aperture of said casing for completely unlocking said handle grip member when said handle grip member receives said second external force.

5. A lock mechanism, adapted to be used in an appliance having a casing, to be coupled with an article movably coupled to said casing for locking said article when said article receives a first external force and unlocking said article when said article receives a second external force, comprising:

a first spring for extension and compression responding to said first external force and said second external force;

a second spring for extension and compression responding to said first external force and said second external force;

a supporting member having a slot thereon;

a sliding member having one end coupled to said article and slidably disposed adjacent to said first spring for sliding and lodging in said slot of said supporting member when said article receives said first external force and for leaving said slot of said supporting member when said article receives said second external force; and

an engaging member having a cylinder mounted thereon and positioned between said second spring and said sliding member for engaging with said second spring and said sliding member.

6. The lock mechanism according to claim 5, wherein said sliding member has a receptacle thereon for engaging with said cylinder mounted on said engaging member.

7. The lock mechanism according to claim 5, wherein said engaging member further has a protruding portion which can project from an aperture of said article for completely locking said article when said article receives said first external force and draw away from said aperture of said article for completely unlocking said article when said article receives said second external force.

8. The lock mechanism according to claim 5, wherein said article is a handle grip.

9. An appliance assembly, comprising:

a casing having an aperture thereon;

a handle grip member movably coupled to said casing for receiving a first external force and a second external force; and

a lock mechanism installed in said casing and coupled with said handle grip member for locking said handle grip member when said handle grip member receives said first external force and unlocking said handle grip member when said handle grip member receives said second external force.

10. The appliance assembly according to claim 9, wherein said lock mechanism comprises:

a first spring disposed in said casing for extension and compression responding to said first external force and said second external force;

a second spring disposed in said casing for extension and compression responding to said first external force and said second external force;

a supporting member having a slot thereon and positioned in said casing;

a sliding member having one end coupled to said handle grip member and slidably disposed adjacent to said first spring in said casing for sliding and lodging in said slot of said supporting member when said handle grip member receives said first external force and for leaving said slot of said supporting member when said handle grip member receives said second external force; and

an engaging member having a cylinder mounted thereon and positioned between said second spring and said sliding member in said casing for engaging with said second spring and said sliding member.

11. The appliance assembly according to claim 10, wherein said sliding member has a receptacle thereon for engaging with said cylinder mounted on said engaging member.

12. The appliance assembly according to claim 10, wherein said engaging member further has a protruding portion which can project from said aperture of said casing for completely locking said handle grip member when said handle grip member receives said first external force and draw away from said aperture of said casing for completely unlocking said handle grip member when said handle grip member receives said second external force.

13. The appliance assembly according to claim 9, wherein said aperture is in the bottom of said casing.

14. The appliance assembly according to claim 9 is a retractable power module.

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