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United States Patent Application**20210370718****Kind Code****A1****Shih; I-Ching ; et al.****December 2, 2021**

COUPLING MECHANISM AND SUPPORTING ASSEMBLY INCLUDING THE SAME

Abstract

A coupling mechanism is provided for coupling a supporting element to a frame, and includes a base member and a C-shaped retainer. The frame includes a frame body and a leg member that has a leg body extending downwardly from the frame body to terminate at an enlarged leg end. The base member defines therein a recess for the enlarged leg end therein. The supporting element is coupled to a lower major surface of the base wall. The C-shaped retainer extends to be disposed about the leg body, and is configured to be detachably coupled to a surrounding wall of the base member for retaining the enlarged leg end in the recess.

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Claims

1. A coupling mechanism for coupling a supporting element to a frame which includes a frame body and a

having an upper hole, two caster wheels mounted at two opposite sides of said caster mount, and a pintle having an upper insert portion configured to be inserted in said through hole of said base wall to permit said supporting element to be coupled to said lower major surface of said base wall, a lower insert portion configured to be inserted in said upper hole of said caster mount, and a radial flange disposed between said upper and lower insert portions so as to be disposed between said caster mount and said base wall once said upper and lower insert portions are respectively inserted in said through hole and said upper hole.

12. (canceled)

Description

FIELD

[0001] The disclosure relates to a coupling mechanism, more particularly to a coupling mechanism for coupling a supporting element to a frame.

BACKGROUND

[0002] CN 206224362U discloses a foot pad for a notebook computer. The foot pad is used to elevate the notebook computer for facilitating heat dissipation of the notebook computer. The dimension of the foot pad in a height direction is variable, and thus, the height of the notebook computer is adjustable by the foot pad.

[0003] CN 109506104 A discloses a computer damping base including a frame body, a heat-dissipation fan mounted above the frame body, a support panel disposed in the frame body, and a first base body disposed beneath the frame body. Four support legs are detachably mounted beneath a bottom surface of the first base body at four corners thereof. Four universal wheels are provided at bottom ends of the support legs.

SUMMARY

[0004] An object of the disclosure is to provide a novel coupling mechanism for coupling a supporting element to a frame, and to provide a novel supporting assembly including the coupling mechanism and the supporting element. With the provision of the supporting assembly, the supporting element may be rapidly detached relative to the frame without using any hand tools.

[0005] According to a first aspect of the disclosure, a coupling mechanism is provided for coupling a supporting element to a frame, and includes a base member and a C-shaped retainer. The frame includes a frame body and a leg member that has a leg body extending downwardly from the frame body to terminate at an enlarged leg end. The base member includes a base wall and a surrounding wall. The base wall has an upper major surface and a lower major surface which is configured for being coupled to the supporting element. The surrounding wall extends upwardly from a marginal edge of the upper major surface of the base wall to define a recess with the base wall. The C-shaped retainer extends to be disposed about the leg body, and is configured to be detachably coupled to the surrounding wall for retaining the enlarged leg end in the recess.

[0006] According to a second aspect of the disclosure, a supporting assembly for a frame includes a base member, a supporting element, and a C-shaped retainer. The frame includes a frame body and a leg member that has a leg body extending downwardly from the frame body to terminate at an enlarged leg end. The base member includes a base wall and a surrounding wall. The base wall has an upper major surface and a lower major surface. The surrounding wall extends upwardly from a marginal edge of the upper major surface of the base wall to define a recess with the base wall. The supporting element is configured to be coupled to the lower major surface of the base wall. The C-shaped retainer extends to be disposed about the leg body, and is configured to be detachably coupled to the surrounding wall for retaining the enlarged leg end in the recess.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Other features and advantages of the disclosure will become apparent in the following detailed

description of the embodiment (s) with reference to the accompanying drawings, in which:

[0008] FIG. 1 is a perspective view illustrating a frame mounted with a plurality of supporting assemblies according to an embodiment of the disclosure;

[0009] FIG. 2 is a perspective view illustrating one of the supporting assemblies;

[0010] FIG. 3 is an exploded perspective view of FIG. 2;

[0011] FIG. 4 is a cross-sectional view of FIG. 2; and

[0012] FIG. 5 is a perspective view similar to FIG. 1 but omitting the supporting assemblies.

DETAILED DESCRIPTION

[0013] Before the disclosure is described in greater detail, it should be noted that where considered appropriate, reference numerals have been repeated among the figures to indicate corresponding or analogous elements, which may optionally have similar characteristics.

[0014] To aid in describing the disclosure, directional terms may be used in the specification and claims to describe portions of the present disclosure (e.g., front, rear, left, right, top, bottom, etc.) . These directional definitions are intended to merely assist in describing and claiming the disclosure and are not intended to limit the disclosure in any way.

[0015] Referring to FIGS. 1 and 2, a plurality of support assemblies 100 are provided for a frame 3, and each of the support assemblies 100 is shown to include a coupling mechanism 1 and a supporting element 2. The coupling mechanism 1 is provided for coupling the supporting element 2 to the frame 3, and includes a base member 11 and a C-shaped retainer 13. The frame 3 includes a frame body 31 and a plurality of leg members 32 each of which has a leg body 321 extending downwardly from the frame body 31 to terminate at an enlarged leg end 322.

[0016] As shown in FIGS. 2 to 4, the base member 11 includes a base wall 111 and a surrounding wall 112. The base wall 111 has an upper major surface 114 and a lower major surface 115 which is configured for being coupled to the supporting element 2. The surrounding wall 112 extends upwardly from a marginal edge of the upper major surface 114 of the base wall 111 to define a recess 113 with the base wall 111. The recess 113 is configured for receiving therein the enlarged leg end 322 of a respective one of the leg members 32. In an embodiment shown in FIGS. 3 and 4, the surrounding wall 112 may have an inner threaded surface portion 116, and the base wall 111 may have a through hole 117 extending from the lower major surface 115 to the upper major surface 114.

[0017] The C-shaped retainer 13 extends to be disposed about the leg body 321 of the respective leg member 32, and is configured to be detachably coupled to the surrounding wall 112 so as to retain the enlarged leg end 322 of the respective leg member 32 in the recess 113. In an embodiment shown in FIGS. 3 and 4, the C-shaped retainer 13 has an outer threaded surface portion 131 configured to be brought into threaded engagement with the inner threaded surface portion 116 of the surrounding wall 112 so as to permit the C-shaped retainer 13 to be detachably coupled to the surrounding wall 112.

[0018] In an embodiment shown in FIGS. 3 and 4, the C-shaped retainer 13 has an upper surface 132, a lower surface 133, an outer peripheral surface 134, an inner curved surface 136 and an inclined juncture surface 137. The outer peripheral surface 134 interconnects the upper and lower surfaces 132, 133, and has the outer threaded surface portion 131. The outer peripheral surface 134 extends circumferentially to terminate at two surface ends 135. The inner curved surface 136 extends between the surface ends 135 for being disposed about the leg body 321, and is disposed between the upper and lower surface 132, 133. The inclined juncture surface 137 extends downwardly and inclinedly from the inner curved surface 136 to the lower surface 133. With the provision of the inclined juncture surface 137, the respective leg member 32 may be prevented from being damaged by the C-shaped retainer 13 when the C-shaped retainer 13 is brought to couple with the surrounding wall 112.

[0019] In an embodiment shown in FIGS. 3 and 4, the coupling mechanism 1 may further include a C-shaped deformable washer 14 and a vibration absorbing washer 15. The C-shaped deformable washer 14 is mounted on the lower surface 133 of the C-shaped retainer 13 for being disposed between the C-shaped retainer 13 and the enlarged leg end 322 of the respective leg member 32, and may be made of a silicone rubber. The vibration absorbing washer 15 is for being disposed between the enlarged leg end 322 of the respective leg member 32 and the base wall 111, and may be made of a more rigid plastic material than the C-shaped deformable washer, such as Mylar. With the provision of the C-shaped deformable washer 14 and the vibration absorbing washer 15, the enlarged leg end 322 of the respective leg member 32 retained in the recess 113 of the base member 11 is positioned between the C-shaped deformable washer 14 and the vibration absorbing washer 15, and may be prevented from being damaged. In addition, with the provision of the vibration absorbing washer 15, the force from the respective leg member 32 may be evenly distributed on the base wall 111 of the base member 11.

[0020] In an embodiment shown in FIGS. 1 to 4, the supporting element 2 may include at least one caster wheel 22, and the frame 3 may be a computer case. Therefore, the frame 3 may be supported in two forms. In the first form, as shown in FIG. 1, the frame 3 has the caster wheels 22 of the supporting assemblies 100 mounted therebeneath to facilitate movement of the frame 3. In the second form, as shown in FIG. 5, the frame body 31 of the frame 3 is only supported by the leg members 32. In other embodiments, the supporting element 2 may include an anti-slip pad, an anti-vibration pad, a suction cup, etc. The supporting element 2 may be provided for elevation and protection of the coupling mechanism 1.

[0021] In an embodiment shown in FIGS. 2 to 4, the supporting element 2 includes a caster mount 21 having an upper hole 211, two of the caster wheels 22, and a pintle 23. The caster wheels 22 are mounted at two opposite sides of the caster mount 21. The pintle 23 has an upper insert portion 231, a lower insert portion 232, and a radial flange 233. The upper insert portion 231 is configured to be inserted in the through hole 117 of the base wall 11 to permit the supporting element 2 to be coupled to the lower major surface 115 of the base wall 11. The lower insert portion 232 is configured to be inserted in the upper hole 211 of the caster mount 21. The radial flange 233 is disposed between the upper and lower insert portions 231, 232 so as to be disposed between the caster mount 21 and the base wall 11 once the upper and lower insert portions 231, 232 are respectively inserted in the through hole 117 and the upper hole 211.

[0022] In sum, with the provision of the supporting assembly 100, the supporting element 2 may be rapidly detached relative to the frame 3 without using any hand tools. In the description above, for the purposes of explanation, numerous specific details have been set forth in order to provide a thorough understanding of the embodiment(s). It will be apparent, however, to one skilled in the art, that one or more other embodiments may be practiced without some of these specific details. It should also be appreciated that reference throughout this specification to "one embodiment," "an embodiment," an embodiment with an indication of an ordinal number and so forth means that a particular feature, structure, or characteristic may be included in the practice of the disclosure. It should be further appreciated that in the description, various features are sometimes grouped together in a single embodiment, figure, or description thereof for the purpose of streamlining the disclosure and aiding in the understanding of various inventive aspects, and that one or more features or specific details from one embodiment may be practiced together with one or more features or specific details from another embodiment, where appropriate, in the practice of the disclosure.

[0023] While the disclosure has been described in connection with what is (are) considered the exemplary embodiment(s), it is understood that this disclosure is not limited to the disclosed embodiment(s) but is intended to cover various arrangements included within the spirit and scope of the broadest interpretation so as to encompass all such modifications and equivalent arrangements.

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