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Multi Directional Latching Mechanism

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Multi Directional Latching Mechanism

Abstract: Disclosed is a latching mechanism that allows multiple modules to be retained in one area without limiting the direction in which the module is installed or removed.

This disclosure relates to the field of enclosures for electronic equipment.

In electronic systems, such as for example computers and servers, electrical and mechanical modules are often mounted to a chassis. In many such systems, the modules may be replaced or changed from time to due to, for example, reconfiguration, upgrading, or repair of a system. Consider a computer system where multiple modules are mounted in an area of the chassis. Example modules include a blank, a PCIe cage and a power supply cage, all of which are optional. Furthermore, assume that the blank and the power supply cage modules mount in the z direction, while the PCIe cage module mounts in the y direction. Prior solutions typically required several brackets, hardware and screws that the user would need to remove or install for each different configuration. This makes installation and removal difficult.

According to the present disclosure, and as understood with reference to the Figure, a latching mechanism allows multiple modules to be retained in one area 10 of a chassis 5 without limiting the direction (x, y, or z) in which the module is installed or removed. Two, or in some cases three, spools 20 are mounted to the vertical wall 30. Because these spools 20 are offset, they provide alignment and retention for the modules in the x, y or z direction, depending on the module that is being installed or removed. This technique also allows the number of screws to be reduced to a single threaded screw that engages a threaded hole 40 in the chassis.

Applying the technique of the present disclosure to the example system described above, the user needs to manipulate only one captive screw (not shown; which engages the threaded hole 40) for the blank and the power supply cage, and no screws for the PCIe cage module. The blank uses 3 spools, a captive screw and a stainless steel latch. The PCIe cage uses 2 spools and the same stainless steel latch as the blank. The power supply cage uses 3 spools and a captive screw. Each is described in more detail below.

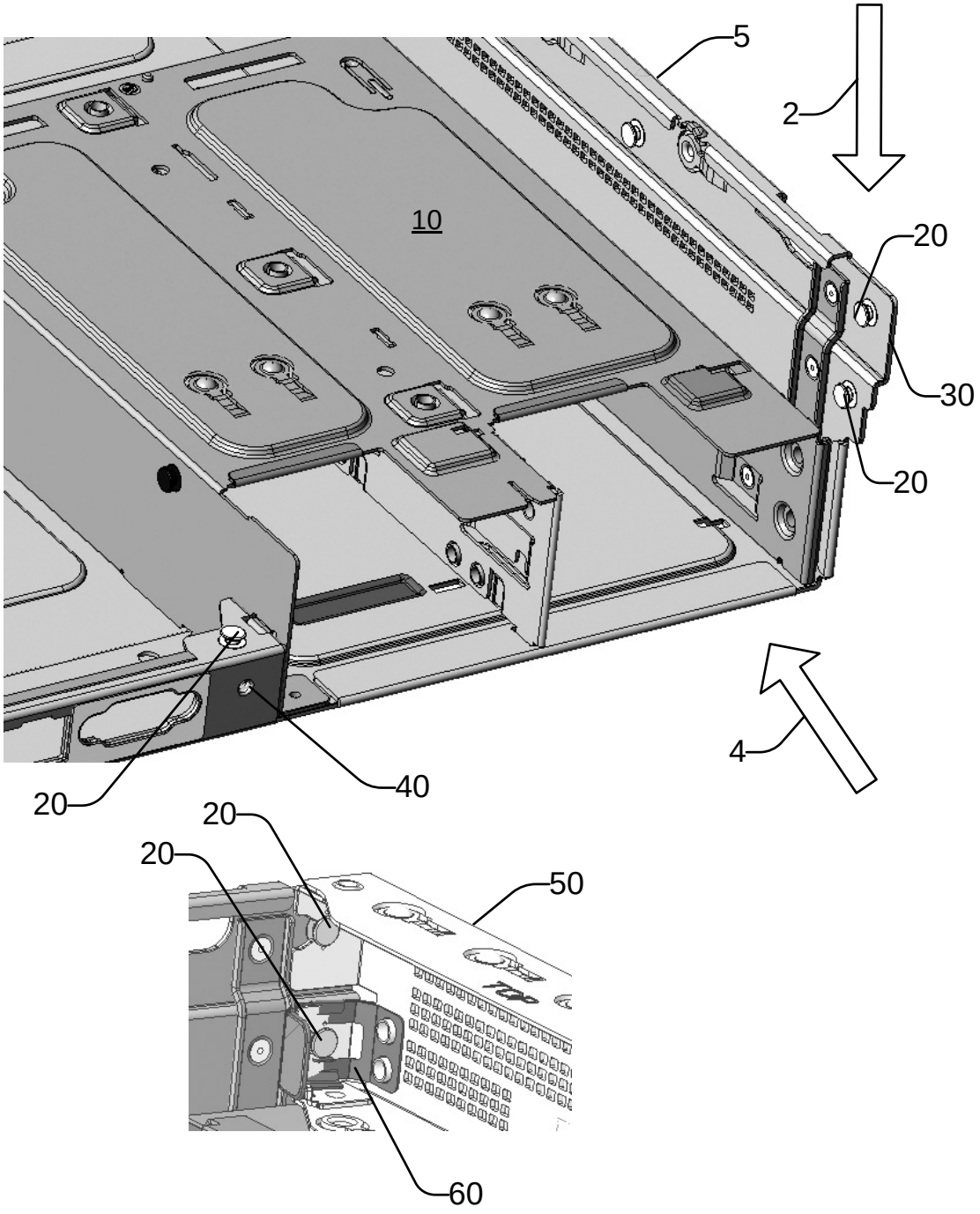
Blank: in one example, the blank 50 is installed in the z-direction 4. For removal, the blank 50 requires only the loosening of the one captive screw. Once that screw has been loosened, the user releases and pulls back on a latch 60 which engages ones of the spools 20. For installation, the user only needs to tighten the one screw. The latch 60 (which may be stainless steel) automatically seats itself and engages the corresponding spool 20.

PCIe Cage: in one example, the cage (not shown) is installed in the y-direction 2. For removal, the user needs only to release the stainless steel latch and pull up. For installation, the user only needs to align the module and push down. The stainless steel latch automatically seats itself.

Power Supply Cage: in one example, the cage (not shown) is installed in the z-direction 4. For removal, the user needs only to loosen one captive screw and then pull back on the module. For installation, the user needs only to align the module, push it back, and then tighten one captive screw.

The disclosed technique advantageously eliminates mounting components such as brackets and additional mounting hardware. This simplifies installation and removal of modules from a system, thus saving time and effort for the user.

Disclosed by Paul E. Westphall, Hewlett Packard Enterprise.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