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<p>(54) Title: MODULAR, RECONFIGURABLE DEVICES</p>		
<p>(57) Abstract</p> <p>A modular, reconfigurable system designed to permit coupling and decoupling of devices or components (14, 18) of varying types, including portable computers or other electrical devices, is disclosed. The system also is adapted to rotate about two adjacent, parallel axes (58, 62) permitting components to be positioned throughout approximately 0-360 degrees. The components (14, 18) are coupled by a connector (54).</p>		

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MODULAR, RECONFIGURABLE DEVICES

FIELD OF THE INVENTION

This invention relates to modular devices and more particularly to reconfigurable portable
5 computers and other electronic or similar apparatus.

BACKGROUND OF THE INVENTION

Technological advances in the computing, electronics, and telecommunications industries have
10 created devices useful to an ever-expanding number of users in a wider variety of operating situations. Increased memory capacities, processing speeds, and telecommunications capabilities of "portable" computers, for example,
15 have combined with decreased size and weight to contribute to greater use of these devices. The advent of multi-media apparatus and component commonality has also augmented the usefulness of many electronic devices, as has rapid improvement
20 in quality and capability of individual components. These rapid improvements to components of an overall device have contributed to consumers desiring periodically to upgrade their systems merely by purchasing the improved components.
25 Consumers also appear eager for access to reconfigurable components to meet the requirements of the varied locations and situations in which the components operate. Many existing electronic systems have components which can neither be
30 decoupled nor reconfigured, however, and thus fail to address these and other consumer needs.

U.S. Patent No. 5,103,376 to Blonder (incorporated herein in its entirety by this
reference), for example, provides a laptop computer
35 having keyboard and display portions whose

positions relative to a user can be reversed. The computer includes a pair of dual-pivoting hinges, each capable of rotation about respective pins, to permit the reversal. According to the Blonder
5 patent, however, the reversing portions are designed merely to facilitate information entry via both the keyboard and a graphics pen associated with the computer. As a result, neither the
10 keyboard nor display is detachable from the remainder of the device, and their reconfigurability is severely limited.

U.S. Patent No. 5,034,858 to Kawamoto, et al., also incorporated herein in its entirety by this reference, discloses electronic equipment having a
15 separable keyboard. The equipment also includes a display that can be both rotated about an axis and tilted into place about a perpendicular axis for use. As with that disclosed in the Blonder patent, however, the display cannot be detached from the
20 main equipment body. Additionally, neither the Blonder nor Kawamoto patent contemplates rotation about two adjacent, parallel axes to permit reconfiguration of components throughout approximately 0-360°.

25 SUMMARY OF THE INVENTION

The present invention, by contrast, provides a modular, reconfigurable system designed to permit mechanical (and, if necessary, electrical) coupling and decoupling of devices or components of varying
30 types. Because system elements can be decoupled, consumers can upgrade individual components as desired without having to purchase an entirely new system. Component redundancy can also be decreased, as a single electronic display, for
35 example, can be coupled for use not only with computers but with appropriate audio-visual or

telecommunications equipment as well. In essence, the invention permits a user to "mix and match" electronic or other devices and components as needed.

5 The innovative system also is adapted to rotate about at least two adjacent, parallel axes. Consequently, the present invention permits components to be repositioned about each other throughout approximately 0-360°, allowing use of a
10 visual display not only in a standard laptop computer format but also in formats facilitating use of the display as, for example, a television or telecommunications monitor or a pen-based computing tablet.

15 It is therefore an object of the present invention to provide a system composed of reconfigurable modules.

It is another object of the present invention to provide a modular system permitting coupling and
20 decoupling of devices and components, particularly electronic devices and components.

It is also an object of the present invention to provide a system having two adjacent, parallel axes of rotation to facilitate component rotation about
25 approximately 0-360°.

Other objects, features, and advantages of the present invention will become apparent with reference to the remainder of the written portion and the drawings of this application.

30 BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an exemplary modular device incorporating the technology of the present invention shown in a nominally "open" position.

35 FIG. 2 is a perspective view of the device of FIG. 1 shown in a nominally "closed" position.

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