DETACHABLE SECUREMENT OF AN ACCESSORY DEVICE TO A HANDHELD COMPUTER

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains to a handheld computing device. More specifically, embodiments of this invention provide for detachably securing an accessory device to a handheld computer using an insertion coupling.

2. Description of the Related Art

A principal feature of handheld computers is portability. To this end, functions and features of handheld computers are sometimes sacrificed to maintain the handheld computer in a small, compacted state. Additional features and functions of the handheld computer may be added by linking the handheld computer to an accessory device. Examples of such accessory devices includes modem devices and communication cradles.

Previous accessory devices have generally been immobile, so that the handheld computer had to use the accessory device as a docking port. However, the widespread use of computers and computer networks has resulted in a need for accessory devices that are portable. Therefore, there is an increasing need for enabling accessory devices to securely couple with a handheld computer without hindering the portability of the handheld computer.

Other previous accessory devices that have been designed to be portable with the handheld computer have relied on coupling mechanism that allows the accessory device to couple with the handheld computer by first placing the handheld computer on the accessory device, and then maneuvering portions of the accessory device around the handheld computer to secure it with the accessory devices. Such coupling mechanisms are overly complicated, requiring the user to perform too many steps and maneuvers to secure the accessory device with the handheld computer. Requiring additional steps to secure the accessory device with the handheld computer leaves the handheld computer prone to being dropped prior to it being secured. This is especially problematic considering that these accessory devices require a free hand from the user for the sole purpose of manipulating portions of the accessory device to secure the handheld computer.

SUMMARY OF THE INVENTION

Embodiments of this invention provide for coupling an accessory device to a back face of a handheld computer while electrically connecting to the handheld computer through a communications or output port. In one embodiment, the accessory device "piggy-backs" on the handheld computer so that the accessory device and handheld computer form a portable combination. An insertion coupling may be used to detachably secure the accessory device with the handheld computer. The insertion coupling used with embodiments of the invention is preferably a snap-in coupling having one or more biased members. The biased members may be contracted to engage an aperture on a back face of the handheld computer. When released, the biased members secure the accessory device to the handheld computer.

In an embodiment, the accessory device incorporates an insertion coupling and has dimensions that complement the handheld computer. The accessory device may then be readily secured to the handheld computer so that the combination of the two devices is portable and easy to handle. Embodiments of the invention may be incorporated with, for example, modem devices which can add communication abilities to the handheld computer.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1**A illustrates a handheld computer coupled to an accessory device under an embodiment of this invention.

FIG. **1**B shows a side view of FIG. **1**A.

FIG. **2**A shows a back side of a handheld computer under an embodiment of this invention.

FIG. **2**B shows a front side of an accessory device under an embodiment of this invention.

FIG. **3** is exploded isometric view of a mechanical coupling incorporated into an accessory device under an embodiment of this invention.

FIG. **4** is a top view of a retainer used with an embodiment of the invention.

FIG. **5**A is a side view of FIG. **4** showing the insertion coupling in a disengaged position, under an embodiment of the invention.

FIG. **5**B is a side view of FIG. **4** showing the insertion coupling retained in an engaged position, under an embodiment of the invention.

FIG. **6**A is a side view of a latch mechanism in an engaged position under an embodiment of the invention.

FIG. **6**B is a side view of the latch mechanism of FIG. **6**A in a disengaged position, under an embodiment of the invention.

DETAILED DESCRIPTION

Embodiments of this invention provide for an insertion coupling that allows an accessory device to be coupled to and secured with a handheld computer. An embodiment of this invention couples an accessory device to a back face of a handheld computer while a coupling of the accessory device connects to a communications or output port of the handheld computer. The accessory device is aligned in a "piggy-back" position with the handheld computer so that the accessory device and handheld computer form a portable combination that enables the accessory device to be carried with the handheld computer using a single hand. The accessory device is coupled to the handheld computer by use of a mechanical coupling that inserts into the back face of the handheld computer. The mechanical coupling may further provide a tactile response that signals a secure engagement between the handheld computer and the accessory device. Preferably, the accessory device has lateral and longitudinal dimensions that complements the handheld computer's dimensions so that the combination of the two devices is easy to hold. The accessory device may include, for example, a modem accessory devices which can add communication abilities to the handheld computer. For purpose of this disclosure, a handheld computer is a combination of a processor and memory, having a portable energy source, and being housed in a manner to be carried with one hand.

FIG. **1**A illustrates a handheld computer **100** that is detachably coupled to an accessory device **110** under an embodiment of this invention. The handheld computer **100** may include palm style computers such as a Palm pilot™, Palm III™, or Palm V™, or Palm VII™ organizers, manufactured by the 3Com Corporation. Other embodiments of the invention can include Windows CE™ handheld computers, or other handheld computers and personal digital assistants.