



US 20090050499A1

(19) **United States**

(12) **Patent Application Publication**
Calco et al.

(10) **Pub. No.: US 2009/0050499 A1**

(43) **Pub. Date: Feb. 26, 2009**

(54) **PROTECTIVE ASSEMBLY FOR PORTABLE DIGITAL DEVICE**

(22) Filed: **May 26, 2008**

Related U.S. Application Data

(76) Inventors: **Wayne A. Calco**, Laguna Hills, CA (US); **Garey De Angelis**, Charleston, SC (US); **Jeff Grady**, Charleston, SC (US); **Andrew Green**, Mount Pleasant, SC (US)

(63) Continuation-in-part of application No. 29/252,488, filed on Jan. 24, 2006, now Pat. No. D,569,607.

Publication Classification

(51) **Int. Cl.**
B65D 85/00 (2006.01)

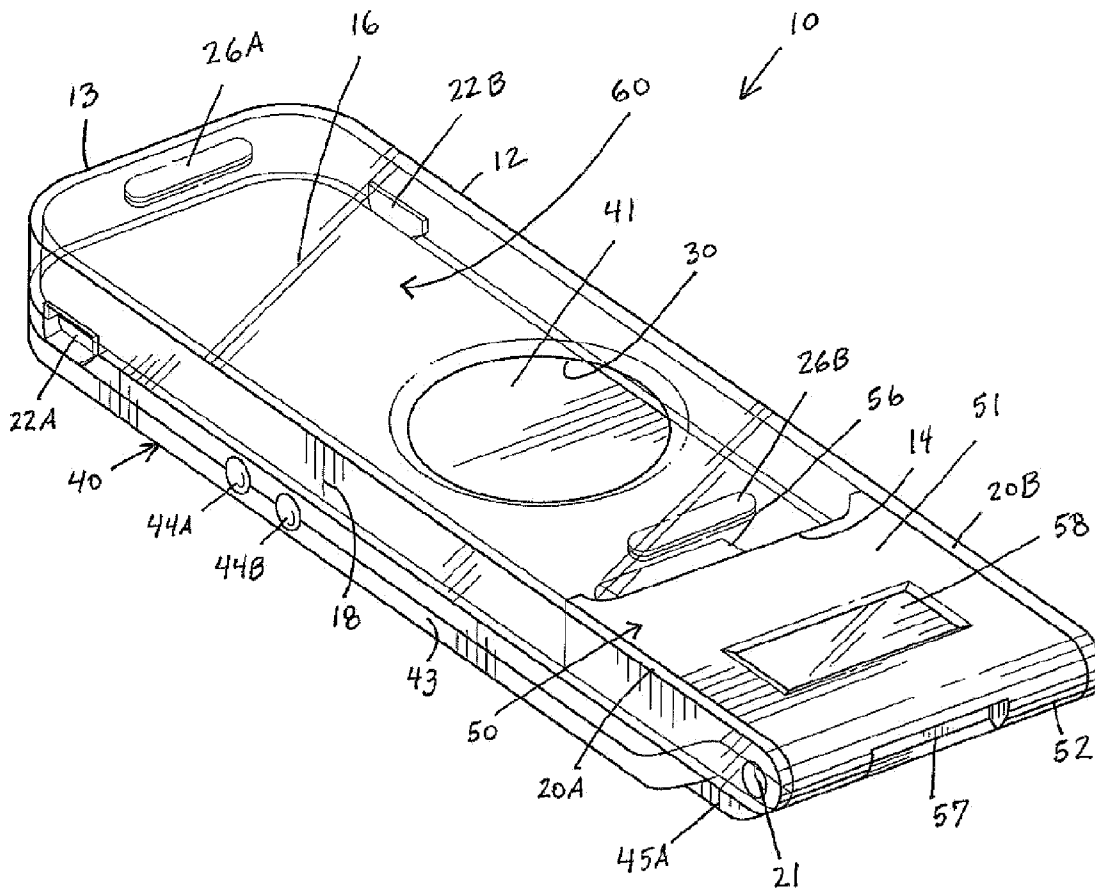
(52) **U.S. Cl.** **206/320**

(57) **ABSTRACT**

Correspondence Address:
INTELLECTUAL PROPERTY/TECHNOLOGY LAW
PO BOX 14329
RESEARCH TRIANGLE PARK, NC 27709 (US)

A protective case for a portable digital media device includes a hinged element and an aperture registered with an input element for such device, to provide protection against inadvertent damage to the device, to selectively operate as a stand to maintain the device in an upright position, and enable user access to the input element when the case is closed.

(21) Appl. No.: **12/127,005**



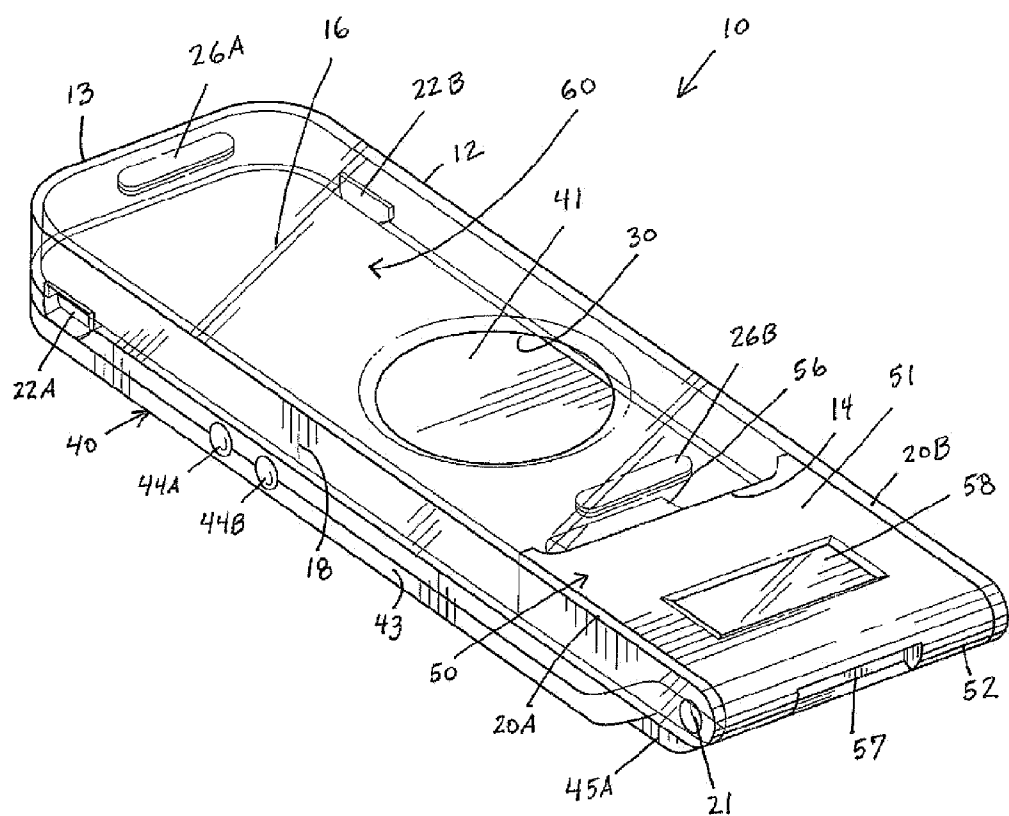


Fig. 1

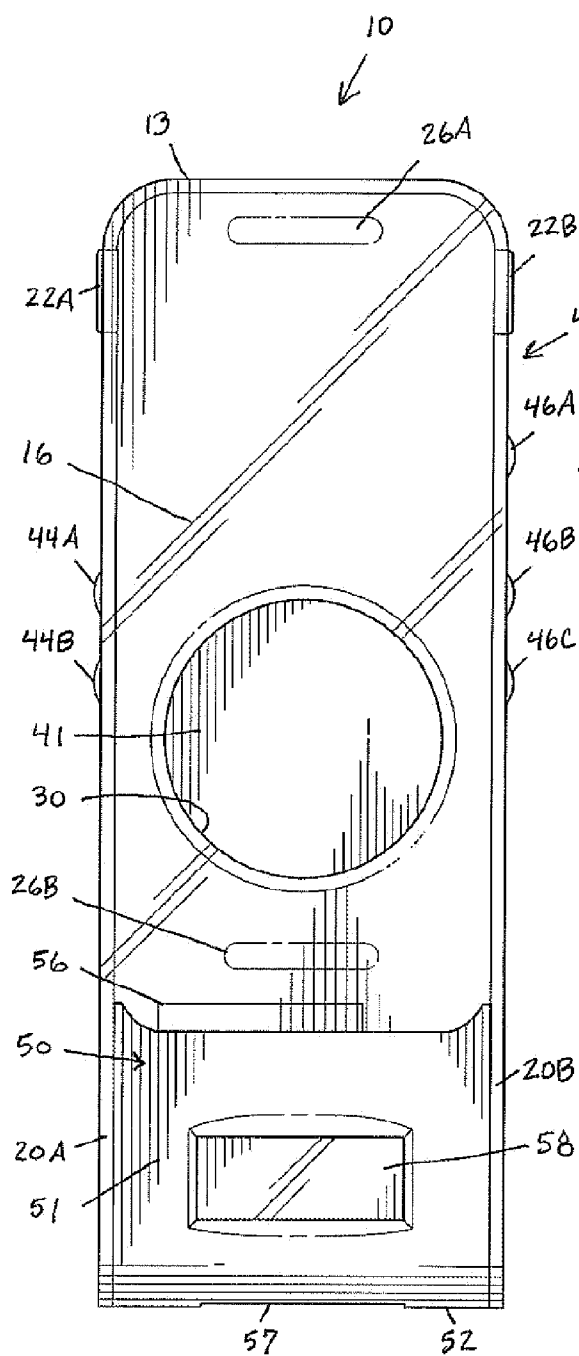


Fig. 2

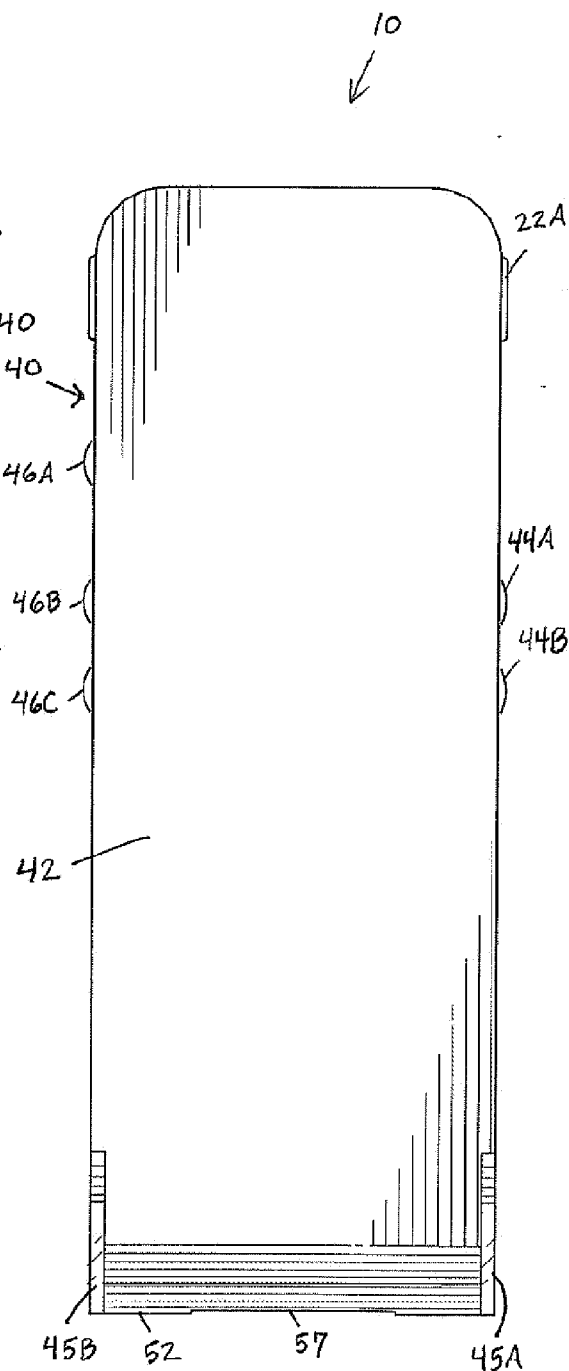


Fig. 3

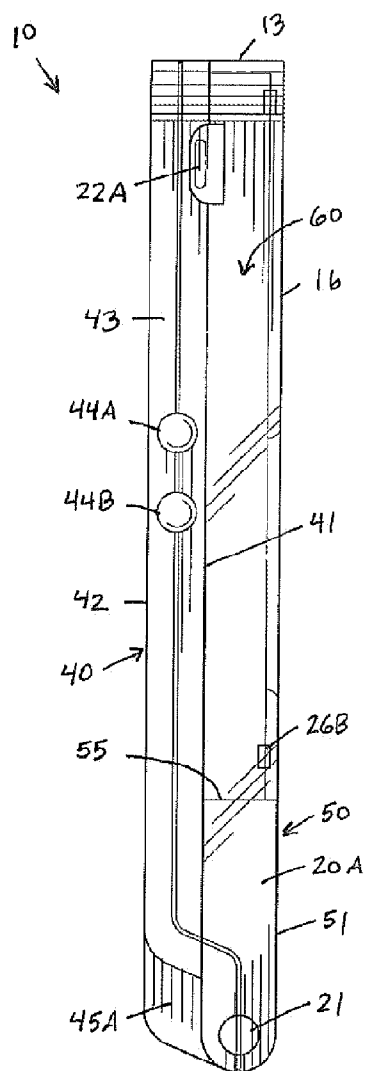


Fig. 4

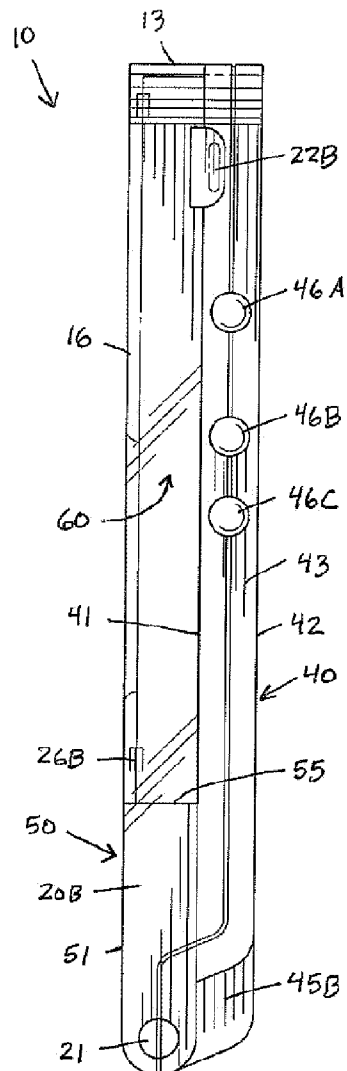


Fig. 5

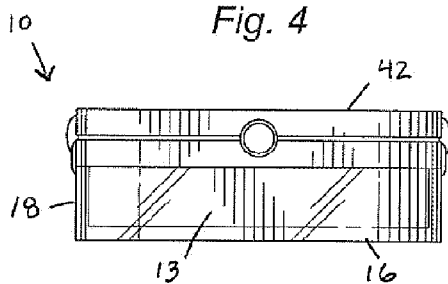


Fig. 6

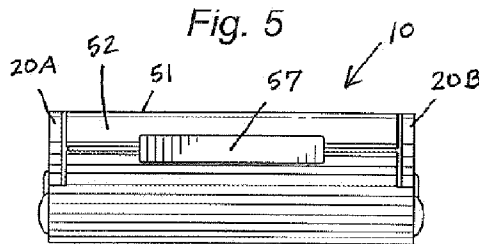
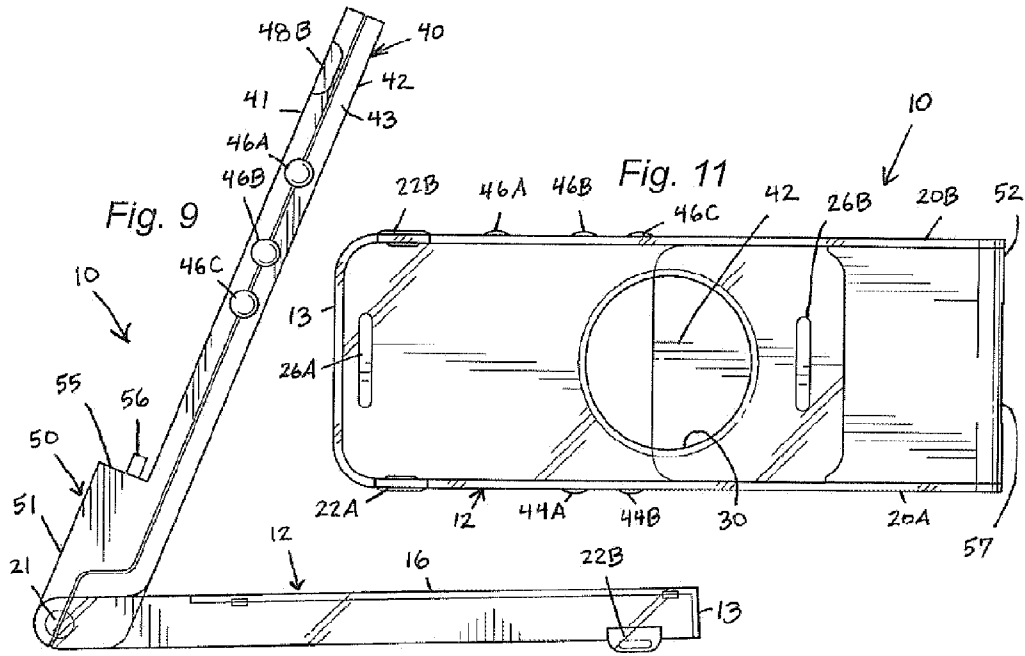
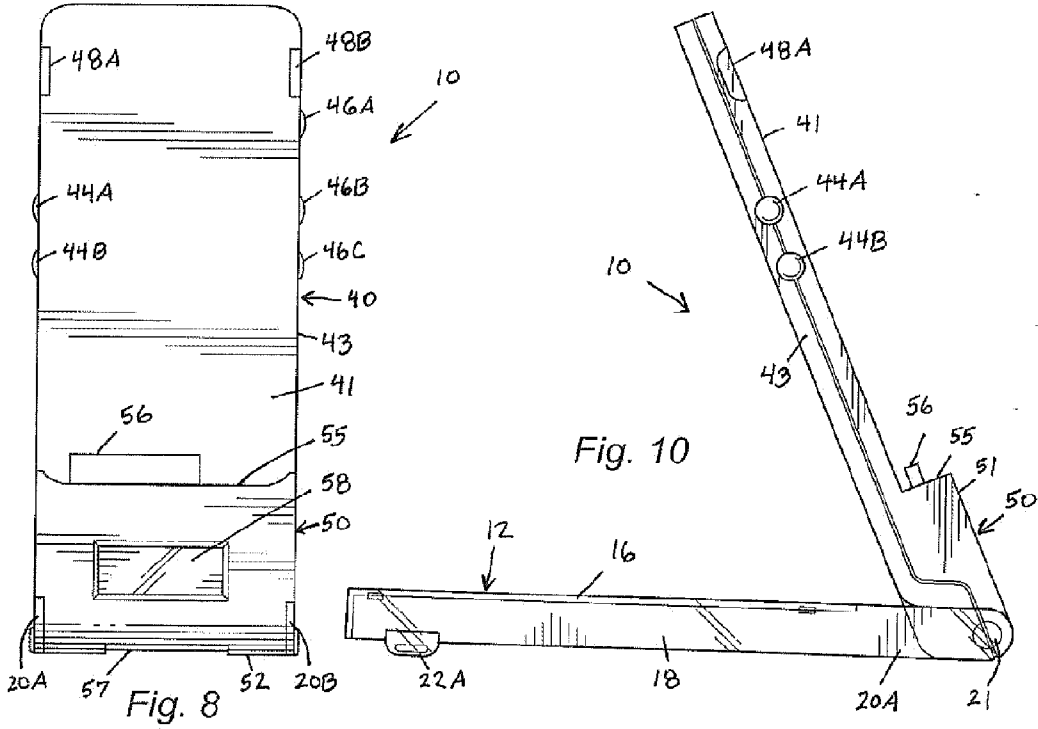


Fig. 7



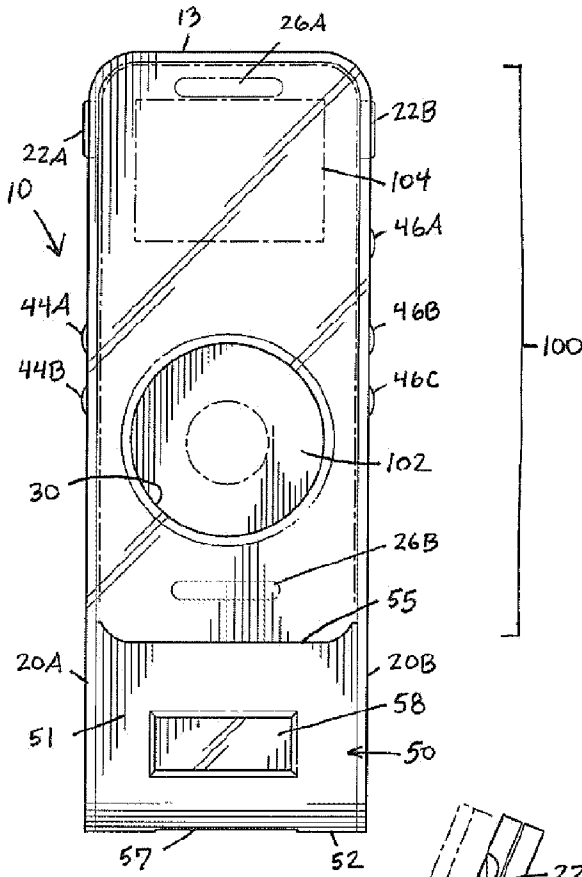


Fig. 12

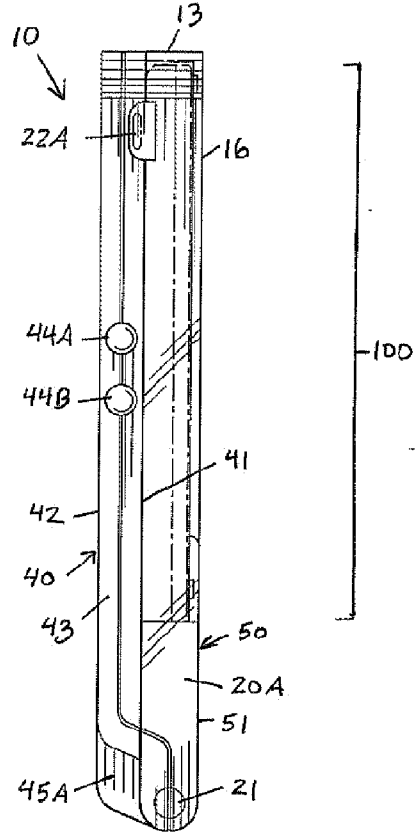


Fig. 14

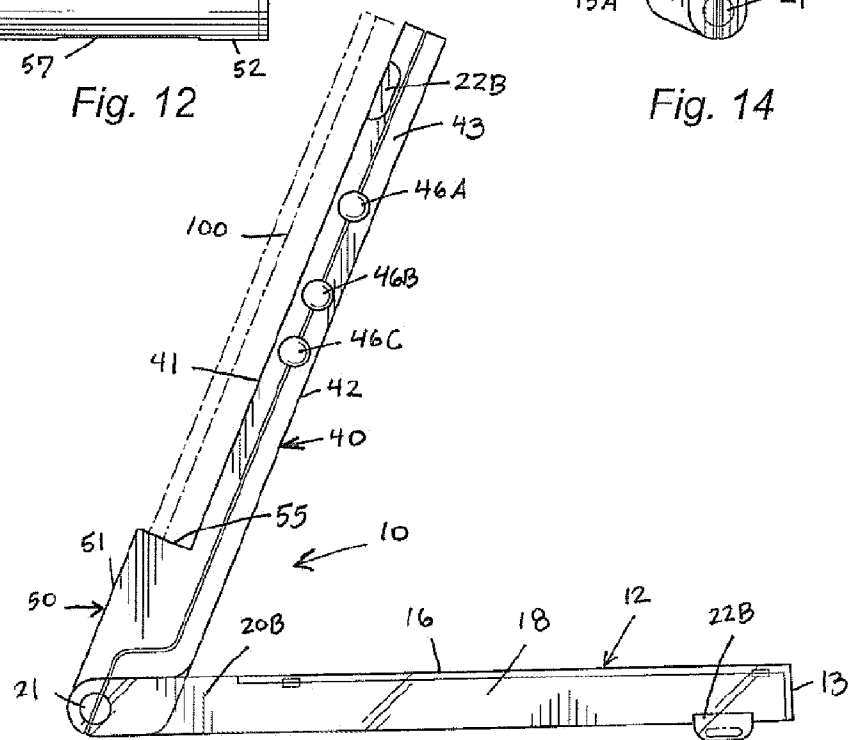


Fig. 13

PROTECTIVE ASSEMBLY FOR PORTABLE DIGITAL DEVICE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This utility patent application is a continuation-in-part of U.S. Design patent application Ser. No. 29/252,488 filed on Jan. 24, 2006, and issuing as U.S. Design Pat. No. D569,607 on May 27, 2008. The entire disclosure of the foregoing application is hereby incorporated by reference herein, for all purposes, and the priority of such application is hereby claimed under the provisions of 35 U.S.C. 120.

FIELD OF THE INVENTION

[0002] The present invention relates to accessories for portable digital devices, including portable digital media storage and playback devices used for on-line downloading, storing and playing digital media files such as, for example, MP3 (i.e., MPEG-1 audio layer 3) audio, WMA (Windows Media Audio) audio, MPEG-4 multimedia, QuickTime multimedia files, and the like. More specifically, the invention relates to a protective assembly that protects the exterior of a portable digital device without impairing access to primary controls for such a device, with the protective assembly also being selectively operable as a stand to maintain the protective assembly and portable digital device disposed therein in an upright position for enhanced user access.

DESCRIPTION OF THE RELATED ART

[0003] Media players of various types are ubiquitous, and have evolved through various forms over the years, from tape cassette players, to compact disc players, and more recently to portable digital media storage and playback devices that enable a user to obtain digital media files (e.g., by download from an Internet site) and store same in a storage medium of a player in various file formats for subsequent selective playback. Preferred digital media storage and playback devices utilize flash memory and/or hard drives to store digital media files. Audio file storage is commonplace. Increasingly, models having sophisticated displays are further able to store and playback image and/or video files. More recently, portable telephone, personal digital assistant, and digital media (e.g., audio, video, and/or image) storage and playback functionalities have converged in versatile devices such as the Treo® family of products made commercially available by Palm, Inc. and the iPhone™ family of products made commercially available by Apple Computer.

[0004] As more and more features are integrated into modern portable digital media devices, the cost of such devices has increased substantially. Given the high cost and relative fragility of such devices, users often desire to continuously keep such devices in protective cases to provide protection against damage.

[0005] Users of portable digital media devices often desire to keep such devices available for use at times, in a variety of different environments. While exercising or commuting via public transit, a user may desire to discreetly keep a portable digital media device within a clothing pocket and listen to music via headphones. While at work, a user may desire to maintain a portable digital media device in an upright position to facilitate easy access to interfaces such as displays and control elements. Dedicated protective cases and stands/mounts to independently provide the foregoing utilities are

commonplace; however, certain types of cases are incompatible in character with certain types of stands/mounts, and it is cumbersome for users to frequently swap portable digital media devices in and out of protective cases.

[0006] It would be desirable to provide a case or mounting device that would confer a desired level of protection against inadvertent damage to a portable digital media device, and yet be selectively adapted for use in various environments without requiring removal of a portable digital media device contained therein.

SUMMARY OF THE INVENTION

[0007] The present invention relates in various aspects to a protective case for a portable digital media device, with the protective case providing protection against inadvertent damage to a portable digital media device, being selectively operable as a stand to maintain a portable digital media device in an upright position, and enabling user access to at least one input element of the portable digital media device when the case is closed.

[0008] In one aspect, the invention relates to a protective case for a portable digital media device having at least one associated input element controllable by a user, the protective case defining a cavity sized and shaped to conform to at least a portion of a portable digital media device, wherein: the case comprises a hinged element selectively moveable between an open position and a closed position; the hinged element is adapted to support (i) the case, and (ii) a portable digital media device containable in the cavity thereof, in an upright position relative to an underlying support surface when said hinged element is disposed in an open position; and the case defines at least one aperture registered with said at least one input element to permit user access to said at least one input element when said hinged element is disposed in a closed position.

[0009] In another aspect, the invention relates to a protective case for a portable digital media device having at least one associated input element controllable by a user, the protective case defining a cavity bounded at least in part by a hinged element and an opposing base element, and adapted to receive a portable digital media device, wherein: the hinged element is arranged to pivot relative to the base element between an open position and a closed position; the hinged element is adapted to support (i) the case, and (ii) a portable digital media device containable in the cavity thereof, in an upright position relative to an underlying support surface when said hinged element is disposed in an open position; and the case defines at least one aperture registered with said at least one input element to permit user access to said at least one input element when said hinged element is disposed in a closed position.

[0010] Other aspects, features and embodiments of the invention will be more fully apparent from the ensuing disclosure and appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a perspective view of a protective assembly for a portable digital device, with the protective assembly disposed in a closed position;

[0012] FIG. 2 is a front elevation view of the protective assembly of FIG. 1, with the protective assembly disposed in a closed position.

[0013] FIG. 3 is a rear elevation view of the protective assembly of FIGS. 1-2, with the protective assembly disposed in a closed position.

[0014] FIG. 4 is a left side elevation view of the protective assembly of FIGS. 1-3, with the protective assembly disposed in a closed position.

[0015] FIG. 5 is a right side elevation view of the protective assembly of FIGS. 1-4, with the protective assembly disposed in a closed position.

[0016] FIG. 6 is a top plan view of the protective assembly of FIGS. 1-5, with the protective assembly disposed in a closed position.

[0017] FIG. 7 is a bottom plan view of the protective assembly of FIGS. 1-6, with the protective assembly disposed in a closed position.

[0018] FIG. 8 is a front elevation view of the protective assembly of FIGS. 1-7, with the protective assembly disposed in an open position to serve as a stand.

[0019] FIG. 9 is a right side elevation view of the protective assembly of FIGS. 8, with the protective assembly disposed in an open position to serve as a stand.

[0020] FIG. 10 is a right side elevation view of the protective assembly of FIGS. 8-9, with the protective assembly disposed in an open position to serve as a stand.

[0021] FIG. 11 is a bottom plan view of the protective assembly of FIGS. 8-10, with the protective assembly disposed in an open position to serve as a stand.

[0022] FIG. 12 is a front elevation view of the protective assembly of FIGS. 1-10, with the protective assembly disposed in a closed position, and further showing in broken lines a portable digital media storage and playback device disposed within a cavity of the protective assembly.

[0023] FIG. 13 is a right side elevation view of the protective assembly and portable digital media storage and playback device of FIG. 12, with the protective assembly disposed in an open position to serve as a stand.

[0024] FIG. 14 is a left side elevation view of the protective assembly and portable digital media storage and playback device of FIGS. 12-13, with the protective assembly disposed in a closed position.

DETAILED DESCRIPTION OF THE INVENTION,
AND PREFERRED EMBODIMENTS THEREOF

[0025] The present invention relates to protective cases for portable digital media devices. The term “portable digital media device” as used herein may encompass various devices adapted to store and playback digital media files. Such devices may further provide mobile computing and wireless communication utilities.

[0026] In one embodiment, a protective case comprises at least one substantially rigid material, such as rigid plastics, metals, composites, and the like. In another embodiment, at least a portion of a protective case comprises a substantially non-rigid material, such as pliable (e.g., thin) plastics, silicone, leather, animal skin, fabric, and the like. Rigid and nonrigid materials may be utilized in combination for different portions of a protective case. Owing to the fragility of display elements associated with portable digital media devices, at least portions of a protective case arranged to cover such a display preferably comprise substantially rigid and transparent materials. Any desirable fabrication technique known in the art may be used to fabricate a protective case with desired materials.

[0027] The term “hinged element” as used herein refers to a portion of a protective case arranged to move in pivotal fashion relative to another portion of such a protective case. A hinge provided along an interface between such portions may include a hinge pin, a rotatable (e.g., circular) protrusion mated with a corresponding hole, a pliable joint, or the like.

[0028] The term “upright position” as used herein refers to a generally non-horizontal position relative to an underlying support surface. Such position may or may not be vertical. An upright position is preferably inclined at an angle relative to an underlying support surface, and such angle is preferably at least about 45 degrees, more preferably at least about 55 degrees, and still more preferably at least about 60 degrees.

[0029] An example of a protective case that is selectively operable as a stand to maintain a portable digital media device in an upright position, and that enables user access to at least one input element of the portable digital media device when the case is closed, is illustrated in FIGS. 1-14. FIGS. 1-5 show perspective, front elevation, rear elevation, left side elevation, and right side elevation views, respectively, of the protective case 10 in a closed position. Top and bottom views of the protective case 10 in a closed position are shown in FIGS. 6-7. FIGS. 8-11 show front elevation, right side elevation, left side elevation, and rear elevation views, respectively, of the protective case 10. The protective case 10 is further shown with an associated portable digital media device (i.e., an iPod device, sold by Apple Inc., Sunnyvale, Calif. USA) disposed therein in FIGS. 12-14, which show front elevation (closed), right side (open), and left side (closed) views, respectively.

[0030] Referring generally to FIGS. 1-11, the protective case 10 includes a hinged (cover) element 12, a rear support element 40, and a lower support portion 50 that extends from the rear support element 40. The hinged element 12 includes an upper edge 13, a lower edge 14, a face portion 16, and a sidewall 18 that extends inwardly from the face portion 16 along three sides thereof. The face portion 16 of the hinged element 12 defines an aperture 30 registered with, and arranged to permit user access to, at least one input element (e.g., a click wheel) of a portable digital media device when such device is reposed within a cavity 60 of the protective case 10. As further portions of the hinged element 12, sidewall extensions 20A, 20B extend beyond the lower edge 14 to engage the lower support portion 50 at a hinge 21. Optional pads 26A, 26B may be divided along an inner portion of the face 16 to cushion or otherwise protect a portable digital media device (not shown) when disposed inside the protective case 10.

[0031] The rear support element 40 includes an inner face 41, an outer face 42 and a lateral edge 43. The lateral edge 43 defines recesses 45A, 45B along lower portions thereof to serve as a travel stop for the hinged element 12 when the hinged element 12 is disposed in an open position to cause the protective case 10 to serve as a stand. The lateral edge defines additional recesses 46A, 46B along upper portions thereof to receive protruding closure elements or tabs 22A, 22B extending from the sidewall 18 and adapted to resist opening of the protective case 12 when the protective case 12 is in a closed position. The lateral edge 43 further includes buttons 44A, 44B, 46A, 46B, 46C to control various functions that may optionally be provided by the case 10.

[0032] Extending downward from the rear support element 40 is a lower support portion 50 that includes a front face 51, a rounded lower edge 52, and an upper edge 55. The upper edge 55 is intended to mate with a lower edge of a portable

digital media device (such as the device **100** illustrated in FIGS. **12-14**) reposable within a cavity **60** defined between the inner surface **41** of the rear support element **40**, the upper edge **55** of the lower support portion **51**, the face **16** of the hinged element **12**, and the sidewall **18** of the hinged element **12**.

[0033] An optional male electrical connector **56** protrudes upward from the upper edge **55**. An optional female electrical connector **57** is provided along the lower edge **52**. Preferably, the male electrical connector **56** adapted to mate with a socket (not shown) defined in a portable digital media device reposable within the cavity **60**. The female electrical connector **57** preferably permits electrical communication with the portable digital media device via the male electrical connector **56**. Optional electronics (not shown) may be provided within the lower support portion **50** and/or the rear support element **40**. Such electronics may include, for example, (a) an FM transmitter adapted to permit local broadcast of media files played by a portable digital media device disposed within the protective case **12**; (b) an FM receiver adapted to permit reception of broadcast radio signals; (c) interface to a remote controller (not shown) adapted to enable remote control of the portable digital media device; and/or (d) a signal amplifier. The buttons **44A**, **44B**, **46A**, **46B**, **46C** disposed along the edge **43** of the rear support element **40** may be used to control any of the foregoing functions. The lower support portion **50** may further include an optional display **58**, such as may be used to provide user-perceptible signals relating to device status, FM transmitter or receiver frequency, volume, or the like.

[0034] To manipulate the protective case **10** into an open position, a user may grasp and upper portion of the hinged element **12**, preferably adjacent to the protruding tabs **22A**, **22B**, and pull the hinged element **12** forward to pivot about the hinge **21**. The hinged element **12** may swing through an angle of approximately three hundred degrees until travel of the sidewall extensions **20A**, **20B** is stopped against upper edges of the recesses **45A**, **45B**. The hinged element **12** is then placed atop an underlying support surface (not shown). In such open state, the rear support element **40**, together with any portable digital media device disposed therein or thereon, is adapted to maintain an upright position. The protective case **10** is shown in such an upright position in FIGS. **8-11**. With the protective case **10** in an open state, a portable digital media device may be inserted into the case **10** against the inner surface **41** of the rear support element **40** and against the upper surface **55** of the lower support portion **50**.

[0035] The protective case **10** is shown with a portable digital media device **100** disposed in a cavity **60** thereof in FIGS. **12-14**. As shown in FIG. **12**, the display **104** of the portable digital media device **100** is visible through the transparent face **16** of the hinged element **12**, and the click wheel **102** of the portable digital media device **100** is accessible through the aperture **30** when the protective case **10** is disposed in a closed position. Thus, the protective case **10** provides protection against damage to the portable digital media device **100**, enables easy user access to inputs for the portable digital media device **100**, and further enables the portable digital media device **100** to be supported in an upright position when desired. The functions of a case and a stand are therefore integrated in a unitary package with maximum convenience to the user.

[0036] While the invention has been described herein in reference to specific aspects, features and illustra-

tive embodiments of the invention, it will be appreciated that the utility of the invention is not thus limited, but rather extends to and encompasses numerous other variations, modifications and alternative embodiments, as will suggest themselves to those of ordinary skill in the field of the present invention, based on the disclosure herein. Correspondingly, the invention as hereinafter claimed is intended to be broadly construed and interpreted, as including all such variations, modifications and alternative embodiments, within its spirit and scope.

What is claimed is:

1. A protective case for a portable digital media device having at least one associated input element controllable by a user, the protective case defining a cavity sized and shaped to conform to at least a portion of a portable digital media device, wherein:

the case comprises a hinged element selectively moveable between an open position and a closed position;

the hinged element is adapted to support (i) the case, and (ii) a portable digital media device containable in the cavity thereof, in an upright position relative to an underlying support surface when said hinged element is disposed in an open position; and

the case defines at least one aperture registered with said at least one input element to permit user access to said at least one input element when said hinged element is disposed in a closed position.

2. The protective case of claim 1, wherein the at least one aperture is defined in the hinged element.

3. The protective case of claim 1, wherein at least one input element comprises a click wheel, and said at least one aperture includes an aperture registered with said click wheel.

4. The protective case of claim 1, wherein said case comprises a substantially transparent material arranged to cover at least a portion of a display screen of said portable digital media device when said portable digital media device is contained in said cavity.

5. The protective case of claim 1, wherein at least a portion of said hinged element is substantially transparent.

6. The protective case of claim 1, wherein said hinged element is substantially rigid.

7. The protective case of claim 1, further comprising a travel stop adapted to restrain movement of the hinged element to maintain the protective case in an upright position.

8. The protective case of claim 7, wherein the travel stop comprises at least one recess adapted to selectively receive a portion of the hinged element to maintain the protective case in an upright position.

9. The protective case of claim 1, wherein said cavity is sized and shaped to conform to a portable digital media storage and playback device adapted to store and play back digital media files.

10. The protective case of claim 1, wherein said portable digital media storage and playback device is further adapted to provide wireless communication utility.

11. The protective case of claim 1, further comprising at least one closure element adapted to resist opening of the case when the case in a closed position.

12. The protective case of claim 1, further comprising a male electrical connector adapted mate with a socket defined in a portable digital media device reposable within the cavity.

13. The protective case of claim **12**, further comprising a female electrical connector permitting electrical communication with the portable digital media device via the male electrical connector.

14. A protective case for a portable digital media device having at least one associated input element controllable by a user, the protective case defining a cavity bounded at least in part by a hinged element and an opposing base element, and adapted to receive a portable digital media device, wherein:

the hinged element is arranged to pivot relative to the base element between an open position and a closed position;

the hinged element is adapted to support (i) the case, and (ii) a portable digital media device containable in the cavity thereof, in an upright position relative to an underlying support surface when said hinged element is disposed in an open position; and

the case defines at least one aperture registered with said at least one input element to permit user access to said at least one input element when said hinged element is disposed in a closed position.

15. The protective case of claim **14**, wherein the at least one aperture is defined in the hinged element.

16. The protective case of claim **14**, wherein at least one input element comprises a click wheel, and said at least one aperture includes an aperture registered with said click wheel.

17. The protective case of claim **14**, wherein said case comprises a substantially transparent material arranged to cover at least a portion of a display screen of said portable digital media device when said portable digital media device is contained in said cavity.

18. The protective case of claim **14**, further comprising at least one recess adapted to selectively receive a portion of the hinged element to maintain the protective case in an upright position.

19. The protective case of claim **14**, further comprising a travel stop adapted to restrain movement of the hinged element to maintain the protective case in an upright position.

20. The protective case of claim **14**, wherein said cavity is sized and shaped to conform to a portable digital media storage and playback device adapted to store and play back digital media files.

21. The protective case of claim **14**, wherein said portable digital media storage and playback device is further adapted to provide wireless communication utility.

* * * * *