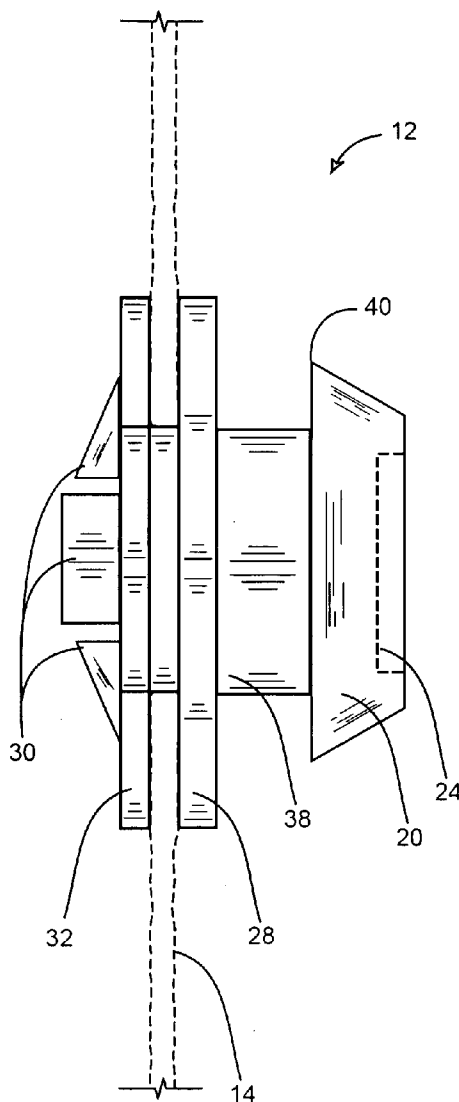




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(19) **United States**(12) **Patent Application Publication**
Engel et al.(10) **Pub. No.: US 2010/0242239 A1**(43) **Pub. Date: Sep. 30, 2010**(54) **FASTENING MECHANISM****Publication Classification**(75) Inventors: **Christopher Engel**, Carlsbad, CA (US); **Mark Leposky**, Carlsbad, CA (US); **Justin Hoffman**, Rancho Santa Margarita, CA (US)(51) **Int. Cl.**
A44B 21/00 (2006.01)
(52) **U.S. Cl.** **24/595.1**
(57) **ABSTRACT**Correspondence Address:
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TMAX Gear, Carlsbad, CA (US)(21) Appl. No.: **12/410,393**(22) Filed: **Mar. 24, 2009**

A fastening mechanism is provided that a male component configured to be slidably received by a female component. The female component includes a receptacle having an open end and a terminal end proximate to the upper end thereof. A detent is located proximate to the terminal end of the receptacle and is configured to engage an aperture of the male component. The female component is configured to be coupled to a portable object, while the male component can be attached to a larger object. In use, the components are coupled together by sliding the female component on to the male component generally transverse to the longitudinal axis of the male component until the detent is received in the aperture of the male component.



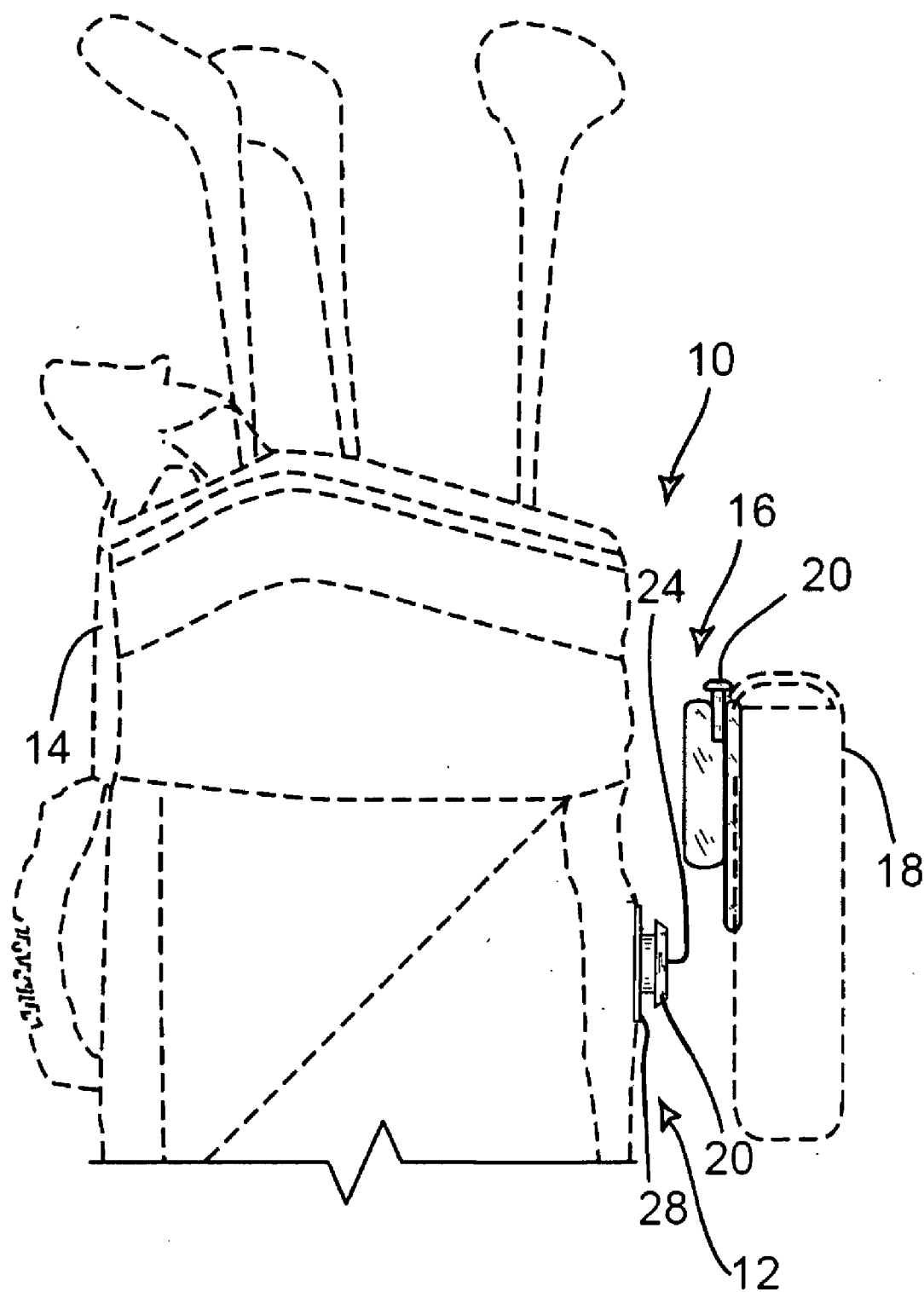


FIG. 1

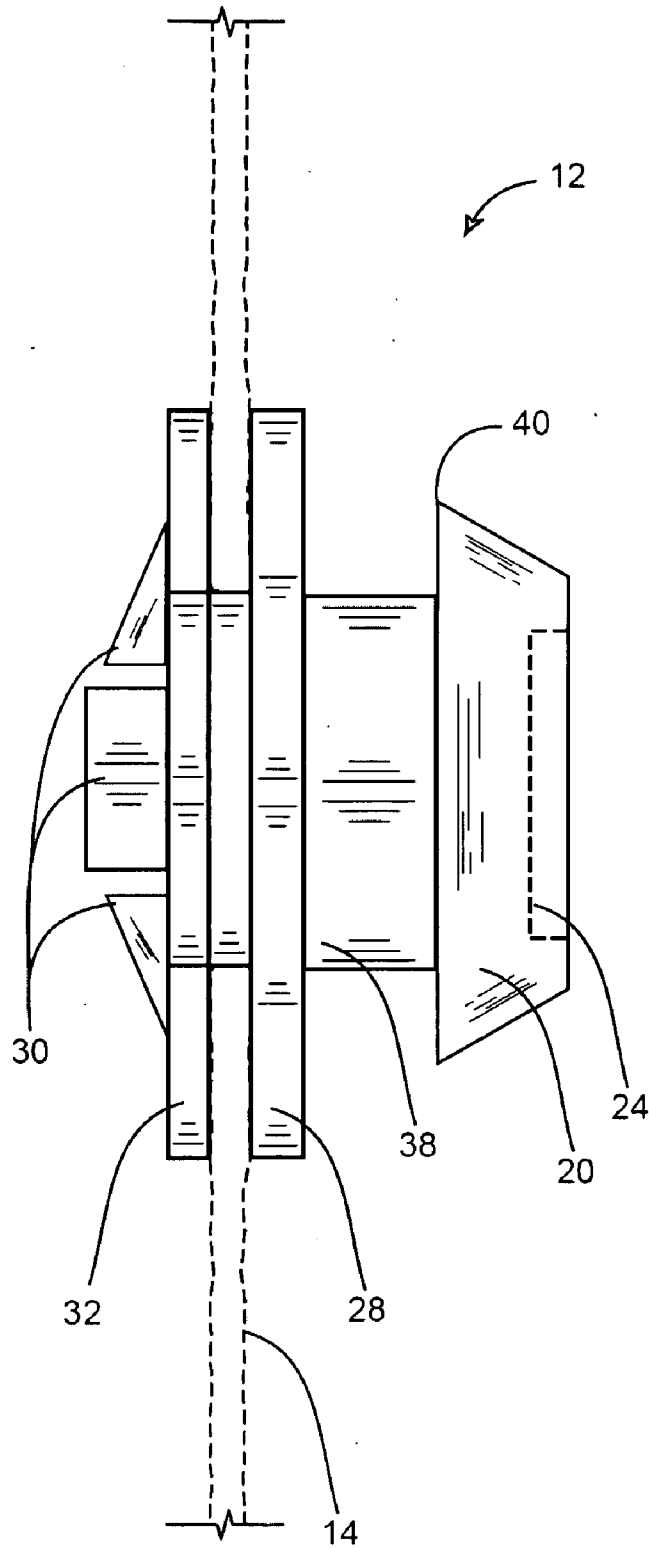


FIG. 2

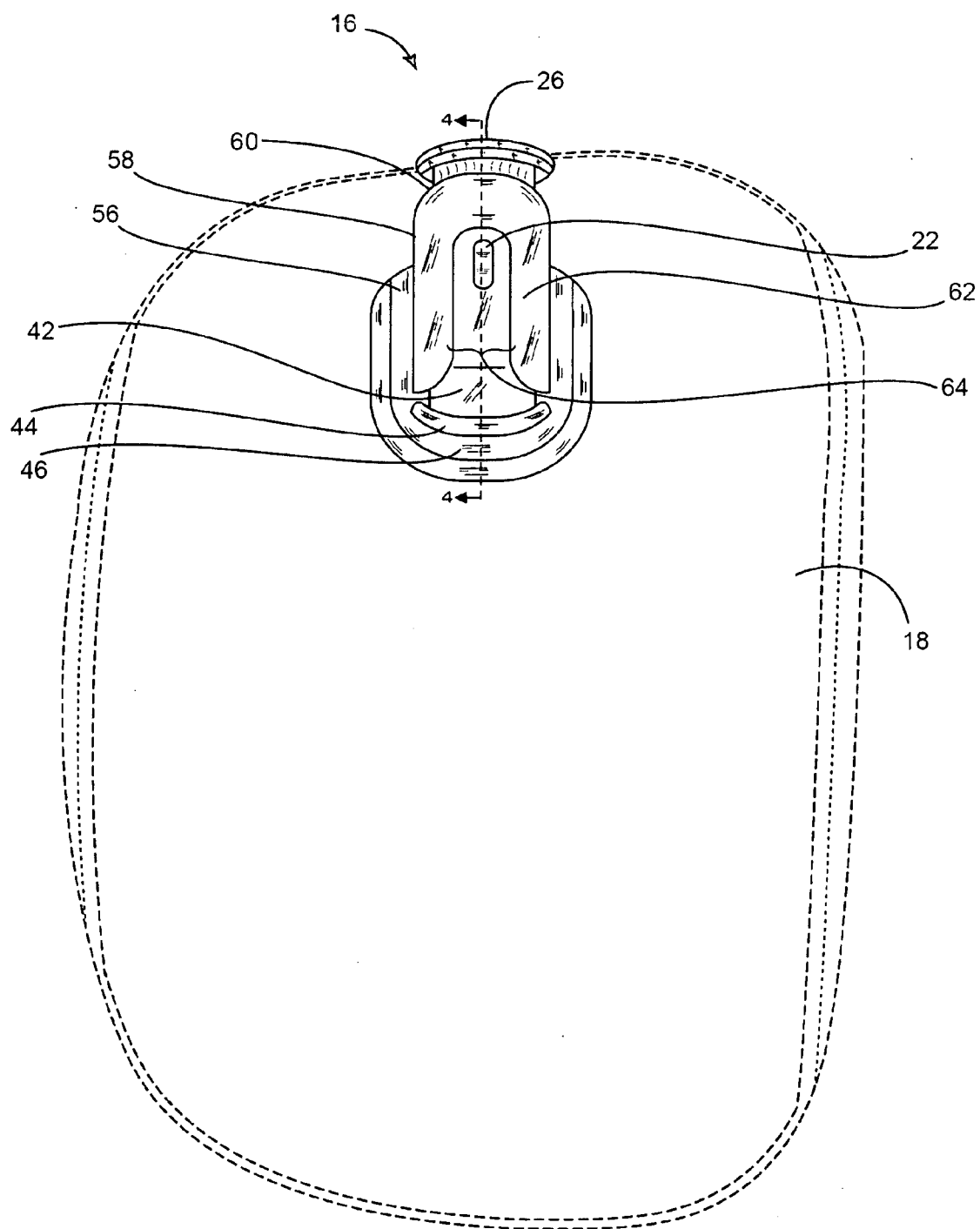


FIG. 3

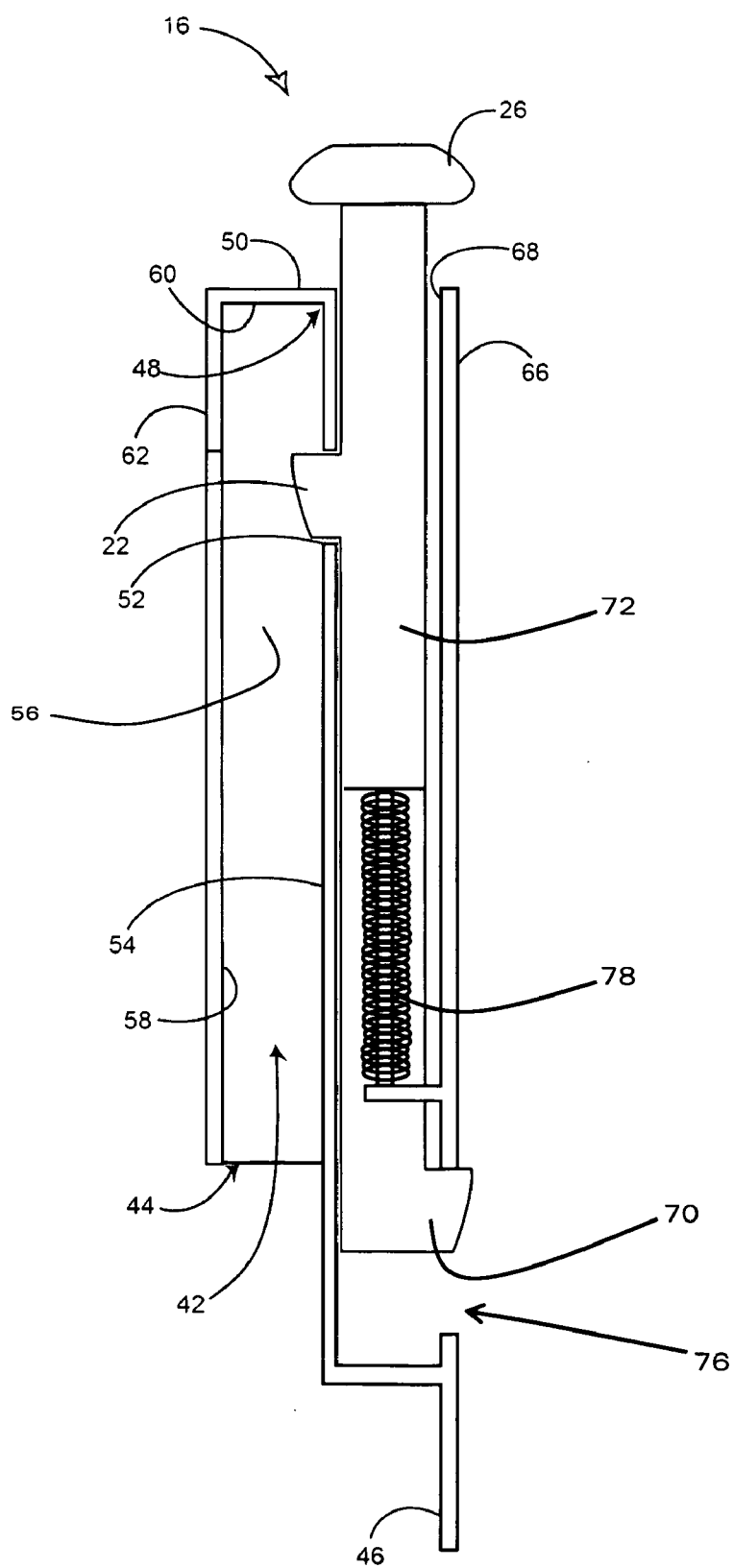


FIG. 4

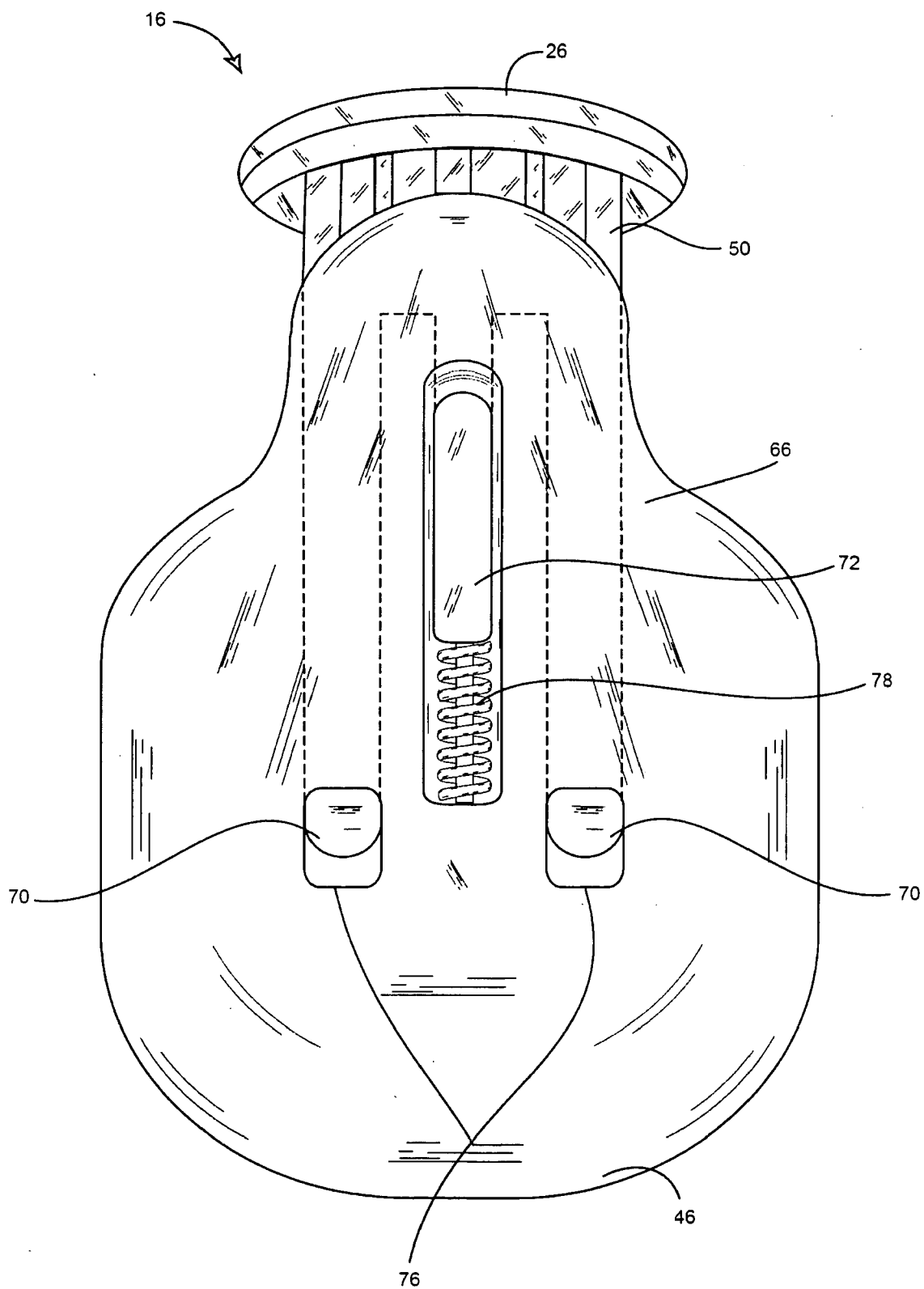


FIG. 5

FASTENING MECHANISM

FIELD OF THE INVENTION

[0001] The present invention relates generally to fastening mechanisms and, more particularly, to fastening mechanisms for personal items.

BACKGROUND OF THE INVENTION

[0002] Fastening mechanisms have long been used to provide a system for securing portable items such as cell phones, GPS receivers, personal digital assistants, and the like to personal belts or pockets. These mechanisms are configured to allow users access to the portable device.

[0003] Such fastening systems typically include a male component and a female component. The male component is configured with a button affixed to the portable device. The female component is typically a u-shaped receptacle with a clip that attaches to a personal belt, pocket, or the like. Thus, the female component is attached to the larger, non-portable object, while the male component is affixed to the portable device, such that the portable device hangs from the female component. The female component typically includes a release button located proximate to the open end of the u-shape, opposite the apex of the u-shape.

[0004] To attach, the user slides the male component into a housing section of the female component, which allows it to hang. To release, the user pushes down on the release button and slides the portable device upwardly, removing the male component from the female component.

[0005] Although such fastening mechanisms are generally affective, shortfalls exist. For example, such mechanisms require two separate motions to release the portable device from the housing. The first motion is to depress the release button; and the second motion is to, while holding the release button, slide the portable device upwards and out of the housing. This process may often require the use of both hands due to the nature of the procedure. In addition, this multi-step process can lead to the accidental release of the release button, which would subsequently impede the process of the discharge of the portable device. Quick access to the portable device is thus hampered by the design of the fastening mechanism.

[0006] It should, therefore, be appreciated that there remains a need for a fastening mechanism that addresses the aforementioned shortcomings. The present invention fulfills this need and others.

SUMMARY OF THE INVENTION

[0007] In general terms, the present invention provides a fastening mechanism having a male component slidably received by a female component. The male component includes a post and a button end. The button end has a greater diameter than a diameter of the post. The button end defines an aperture that cooperates with a detent of the female component to secure the components together. The female component includes a receptacle for slidably receiving the male component in which the terminal end of the receptacle is disposed proximate to an upper end of the female component. The components are coupled together by sliding the female component on to the male component generally transverse to the longitudinal axis of the male component until the detent is

received in the aperture of the male component. Thus, the male component is attached proximate to the upper end of the female component.

[0008] More specifically, and by way of example in an embodiment of the invention, the female component includes a release button coupled to a detent such that depressing the button causes the detent to disengage from the male component. The release button can be located at an upper end proximate to the terminal end of the receptacle. To remove, the user depresses the release button, causing the detent to disengage from the male component and allowing the user to slide the female component away from the male component in a single action. In this manner, the fastening mechanism ensuring secure attachment, while allow for convenient detachment.

[0009] In a detailed aspect of an exemplary embodiment of the invention, the female component is attached to a portable object such as a removable pocket, a sleeve for an electronic device, a mobile phone, personal digital assistant, and a global positioning system receiver, to name a few.

[0010] In another detailed aspect of an exemplary embodiment of the invention, the male component is attached to an object such as a golf bag, a gym bag, a suitcase, a backpack, a briefcase, and a suitcase.

[0011] In yet another detailed aspect of an exemplary embodiment of the invention, the male component includes an annular flange disposed proximate to the surface of the object. The male component can further include prongs extending from the annular flange that couple to a backing.

[0012] In an independent aspect of the invention, a female component is provided for use with a male component having a post defining a longitudinal axis, a button end attached to the post and defining an aperture on a terminal end aligned with the longitudinal axis of the post. The female component includes a body having an upper end and a lower end. The body includes a base wall and an intermediate wall in spaced relationship with the base wall defining a cavity between the base wall and the intermediate wall. The cavity has an opening at the upper end of the body for receiving a release button. A flange is positioned over the intermediate wall defining a receptacle having a width less than the diameter of the button end of the male component. The flange configured such that a terminal end of the receptacle is proximate to the upper end of the body and an open end of the receptacle is proximate to the lower end of the body.

[0013] In a detailed aspect of an exemplary embodiment, the release button extends through the upper opening into the cavity of the body. The button is operatively coupled to a detent extending through the detent opening of the intermediate wall to engage the aperture of the male component, such that depressing the button causes the detent to disengage from the male component.

[0014] For purposes of summarizing the invention and the advantages achieved over the prior art, certain advantages of the invention have been described herein. Of course, it is to be understood that not necessarily all such advantages may be achieved in accordance with any particular embodiment of the invention. Thus, for example, those skilled in the art will recognize that the invention may be embodied or carried out in a manner that achieves or optimizes one advantage or group of advantages as taught herein without necessarily achieving other advantages as may be taught or suggested herein.

[0015] All of these embodiments are intended to be within the scope of the invention herein disclosed. These and other embodiments of the present invention will become readily

apparent to those skilled in the art from the following detailed description of the preferred embodiments having reference to the attached figures, the invention not being limited to any particular preferred embodiment disclosed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] Embodiments of the present invention will now be described, by way of example only, with reference to the following drawings in which:

[0017] FIG. 1 is a side view of a first embodiment of a fastening mechanism in accordance with the present invention, depicting a male component attached to an outer wall of a golf bag and a female component attached to a sleeve for housing a mobile device.

[0018] FIG. 2 is a side perspective view of the male component of the fastening mechanism of FIG. 1.

[0019] FIG. 3 is a perspective view of the female component of the fastening mechanism of FIG. 1.

[0020] FIG. 4 is a cross-sectional view of the female component of the fastening mechanism of FIG. 1, taken along line 4-4 of FIG. 3.

[0021] FIG. 5 is a rear view of the female component of the fastening mechanism of FIG. 1, depicting arms for the release button in phantom.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0022] Referring now to the drawings, and particularly to FIG. 1, there is shown a fastening mechanism 10 having a male component 12 attached to an outer wall 14 of a golf bag and a female component 16 attached to a sleeve 18 for housing a mobile device. The female component is configured to slide onto a button end 20 of the male component. The female component includes a detent 22 that engages an aperture 24 defined by the button end, securing the components together. To remove, the user depresses a release button 26 of the female component, causing the detent to disengage from the male component and allowing the user to slide the female component away from the male component in a single action. In this manner, the fastening mechanism enables convenient access to the portable object, while ensuring secure attachment to the golf bag.

[0023] With reference now to FIG. 2, the male component 12 includes an annular flange 28 disposed proximate to the outer wall 14 of the golf bag. Prongs 30 extend from the annular flange through the wall, coupling to a backing 32. More particularly, four prongs are provided, each having a tapered terminal end that extends through an aperture defined by the backing, providing a snap fit. This configuration enables easy mounting on variety of products, such as gym bags, suitcases, backpacks, briefcases, and suitcases to name a few. In other embodiments, various outer approaches can be used for mounting the male component without departing from the invention. In addition, the male component can be attached to various other objects without departing from the invention.

[0024] With continued reference to FIG. 2, the male component 12 further includes a post 38 that extends from annular flange 28, defining a longitudinal axis. The diameter of the post is less than that of the button end 20, so that the post can fit through a slot 64 (FIG. 3) of the female component. In the exemplary embodiment, the post has diameter of about 5 mm, and the button end has a diameter of about 15 mm. The post

terminates in the button end 20. The aperture 24 of the button end is centered about the longitudinal axis of the post. The button end tapers from the aperture to the peripheral edge 40, facilitating the detent to be received with the aperture 24. In the exemplary embodiment, the male component is formed of molded plastic components; in other embodiments, various other materials can be used to include various plastics, composites, and metals without departing from the invention.

[0025] With reference now to FIGS. 3 and 4, the female component 16 defines a receptacle 42 for slidably receiving the male component. The receptacle includes an open end 44 proximate to a lower end 46 of the female component and a terminal end 48 (FIG. 4) disposed proximate to an upper end 50 of the female component. The detent 22 is positioned within the receptacle proximate to the terminal end. The detent extends through a detent opening 52 defined by an intermediate wall 54.

[0026] A peripheral sidewall 56 extends outwardly from the intermediate wall 54, aiding in defining the receptacle. The sidewall includes two spaced-apart portions 58 that extend from the open end of the receptacle towards the terminal end 48 and an end portion 60 that extend about the terminal end 48 of the receptacle between the two spaced-apart portions.

[0027] As best seen in FIGS. 3 and 4, the female component 16 further includes a flange 62 positioned over the intermediate wall 54 and projecting inwardly from the sidewall 56. The flange defines the slot 64 (FIG. 3) between the opposing edges of the flange. As mentioned above, the slot has a width less than the diameter of the button end 20 of the male component 12. Thus, the button end must pass through the open end 44 of the receptacle to couple the components.

[0028] With reference to FIG. 5, the female component 16 further includes a base wall 66 configured to be coupled to the portable item. In the exemplary embodiment, the base wall is disposed on an exterior side of the outer layer of the sleeve. In other embodiments, the base wall can be attached to the interior side of the outer surface of the sleeve. Moreover, other methods for attaching the female component to a portable item can be used departing from the invention. The female component can be used with various types of objects, such as a compartment, mobile phone, personal digital assistant, a global positioning system receiver, or any other portable object or containers. In the exemplary embodiment, the female component is formed of molded plastic components, excluding the spring, which is metal. In other embodiments, various other materials can be used to include various plastics, composites, and metals without departing from the invention.

[0029] With reference again to FIG. 4, the intermediate wall 54 is in spaced relationship with the base wall 66, defining a cavity 68 between the base wall and the intermediate wall for receiving the release button assembly 26. The cavity has an opening 70 at the upper end 50 of the body. The release button extends through the upper opening into the cavity.

[0030] As best seen in FIG. 5, the release button 26 includes three parallel arms, two outer arms 70, and a center arm 72, disposed within the base cavity 68. The outer arms 70 each include a flanged end 74 that cooperates with a corresponding catch opening 76 defined by the base wall, to define a range of motion for the release button.

[0031] The center arm 72 includes the detent 22, which extends through the detent opening 52 of the intermediate wall 54. The lower end of the center arm is coupled to a spring

78. The spring is positioned to bias the release button upward, causing the detent to extend outward into the receptacle. By pressing the release button downward, the center arm deflects backward such that the detent retracts such that the detent disengages from the male component, allowing the components to disengage.

[0032] In other embodiments, various other configurations for the detent can be used, such as spring-operated ball, a deflectable catch, or other methods for holding a mechanical part in relation to another, to include those in which the parts can be disengaged by applying force to one of the parts. Thus, in other embodiments, the release button can be excluded entirely without departing from the invention.

[0033] It should be appreciated from the foregoing that the present invention provides a fastening mechanism having a male component configured to be slidably received by a female component. The female component includes a receptacle having an open end and a terminal end proximate to the upper end thereof. A detent is located proximate to the terminal end of the receptacle and is configured to engage an aperture of the male component. The female component is configured to be coupled to a portable object, while the male component can be attached to a larger object. In use, the components are coupled together by sliding the female component on to the male component generally transverse to the longitudinal axis of the male component until the detent is received in the aperture of the male component.

[0034] Although the invention has been disclosed in detail with reference only to the exemplary embodiments, those skilled in the art will appreciate that various other embodiments can be provided without departing from the scope of the invention. Accordingly, the invention is defined only by the claims set forth below.

What is claimed is:

1. A fastening mechanism, comprising:

a male component configured to be attached to a container, the male component having a post defining a longitudinal axis and a button end, the button end having a greater diameter than a diameter of the post, the button end defining an aperture centered about the longitudinal axis; and

a female component configured to be attached to a portable item, the female component having a receptacle for slidably receiving the male component in which the terminal end of the receptacle is disposed proximate to an upper end of the female component, the female component having a detent extending from an interior wall proximate to the upper end to engage the aperture of the male component;

wherein the male component and the female component are coupled together by sliding the female component on to the male component generally transverse to the longitudinal axis of the male component until the detent is received in the aperture of the male component.

2. A fastening mechanism as defined in claim 1, wherein the male component includes a backing coupled to a second end of the post.

3. A fastening mechanism as defined in claim 2, wherein the male component further includes an annular flange coupled to the post and disposed proximate to an outer surface of the container.

4. A fastening mechanism as defined in claim 1, wherein the female component includes a release button configured to retract the detent to release the male component.

5. A fastening mechanism as defined in claim 4, wherein the release button has a deflectable arm attached to the detent, wherein the arm is biased such that the detent extends through the detent opening.

6. A fastening mechanism as defined in claim 1, wherein the female component is attached to the outer surface of a sleeve configured to house the personal item, and the personal item is selected from a group consisting of a mobile phone, personal digital assistant, and a global positioning system receiver.

7. A fastening mechanism as defined in claim 1, wherein the male component is attached to a container selected from a group consisting of a golf bag, a gym bag, a suitcase, a backpack, a briefcase, and a suitcase.

8. In a fastening mechanism having a male component and a female component, the male component having a post defining a longitudinal axis, a button end attached to the post and defining an aperture on a terminal end aligned with the longitudinal axis of the post, the female component comprising:

an upper end;

a lower end;

a base wall configured to be coupled to a portable item;

an intermediate wall in spaced relationship with the base wall defining a cavity between the base wall and the intermediate wall, the cavity having an opening at the upper end of the body, the intermediate wall defining a detent opening proximate to the upper end of body;

a peripheral side wall extending outwardly from the intermediate wall;

a flange projecting inwardly from the side wall and positioned over the intermediate wall, the flange defining a receptacle having a width less than the diameter of the button end of the male component, the flange configured such that a terminal end of the receptacle is proximate to the upper end of the body and an open end of the receptacle is proximate to the lower end of the body; and

a detent extending through the detent opening of the intermediate wall to engage the aperture of the male component.

9. A fastening mechanism as defined in claim 8, wherein the female component is attached to the outer surface of a sleeve configured to house the personal item, and the personal item is selected from a group consisting of a mobile phone, personal digital assistant, and a global positioning system receiver.

10. A fastening mechanism as defined in claim 8, further comprising a release button extending through the upper opening into the cavity, the button operatively coupled to the detent extending through the detent opening of the intermediate wall to engage the aperture of the male component, wherein depressing the button causes the detent to disengage from the male component.

11. A fastening mechanism as defined in claim 10, wherein the release button has a deflectable arm attached to the detent, wherein the arm is biased such that the detent extends through the detent opening.

12. A fastening mechanism as defined in claim 11, wherein the release button further includes two outer arms disposed on opposing sides of the deflectable arm, the outer arms having each having a flanged end that cooperates with a corresponding catch defined by the base wall.

13. A fastening mechanism, comprising:

a male component having a post defining a longitudinal axis and a button end, the button end having a greater

diameter than a diameter of the post, the button end defining an aperture centered about the longitudinal axis; and

the female component having

- a body having an upper end and a lower end, the body having
 - a base wall,
 - an intermediate wall in spaced relationship with the base wall defining a cavity between the base wall and the intermediate wall, the cavity having an opening at the upper end of the body, the intermediate wall defining a detent opening proximate to the upper end of body,
 - a peripheral side wall extending outwardly from the intermediate wall, and
 - a flange projecting inwardly from the side wall and positioned over the intermediate wall, the flange defining a receptacle having a width less than the diameter of the button end of the male component, the flange configured such that a terminal end of the receptacle is proximate to the upper end of the body and an open end of the receptacle is proximate to the lower end of the body;
- a detent extending through the detent opening of the intermediate wall to engage the aperture of the male component; and
- a release button extending through the upper opening into the cavity of the body, the button operatively coupled to a detent extending through the detent opening of the intermediate wall to engage the aper-

ture of the male component, wherein depressing the button causes the detent to disengage from the male component.

14. A fastening mechanism as defined in claim **13**, wherein the release button has a deflectable arm attached to the detent, wherein the arm is biased such that the detent extends through the detent opening.

15. A fastening mechanism as defined in claim **14**, wherein the release button further includes two outer arms disposed on opposing sides of the deflectable arm, the outer arms having each having a flanged end that cooperates with a corresponding catch defined by the base wall.

16. A fastening mechanism as defined in claim **13**, wherein the female component is attached to the outer surface of a sleeve configured to house a personal item.

17. A fastening mechanism as defined in claim **16**, wherein the personal item is selected from a group consisting of a mobile phone, personal digital assistant, and a global positioning system receiver.

18. A fastening mechanism as defined in claim **13**, wherein the male component includes an annular flange coupled to the post and disposed proximate to an outer surface of the container.

19. A fastening mechanism as defined in claim **18**, wherein the male component includes prongs extending from the annular flange to couple to a backing.

20. A fastening mechanism as defined in claim **19**, wherein the backing defines an aperture to receive the prongs therethrough.

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