Portable objects such as luggage, cases, purses, bags, sporting equipment, weaponry and the like typically have a handle and a detachable shoulder strap. The discomfort caused by the weight of the object and the shock to both carrier and object of walking is alleviated by clipping an elastic apparatus between the ends of the shoulder strap and the portable object. Disclosed is a short elastic suspenders that includes an elastic strap to be removably attached by a first connector to the D-ring of a portable object. The other end of the suspenders has a D-ring connector configured to removably be attached to by the snap/hook fastener of the original shoulder-carrying strap of the portable object.
DETACHABLE SHOCK ABSORBER ACCESSORY FOR SHOULDER STRAP

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

The present invention relates to a short elastic suspender for removable attachment between the ends of a carrying strap for a portable object and the object. More particularly, the present invention relates to a short elastic suspender which relieves physical stress caused by the burden of carrying portable objects such as luggage, sports gear, laptop computer cases, purses and the like. The addition of this apparatus allows the carrying strap that was furnished with the portable object to be retained, unaltered, for appearance while adding the benefits of elasticity to ease the burden of the person carrying the object, as described herein.

[0002] 2. Description of the Related Art

Conventionally, a laptop computer ranges in thickness from less than 1" to several inches, and is large enough to accommodate a display screen that typically ranges from 14" to 17" in diagonal size, and requires a separate carrier in the form of a briefcase or backpack. The computer alone may weigh over 6½ lb and is accompanied by a power supply, such as, for example, an AC/DC transformer or “brick”, a car adapter, and requisite business papers, pencils and assorted necessary paraphernalia. Adding to the carrying case those various optional pieces of gear the user prefers, including, for example, floppy disks, a floppy drive, optical disks, “flash” memory storage and the like, can easily increase the total weight to be carried to be in excess of 15 lb.

In order to conveniently transport these items, they are typically placed into a carrying case. This carrying case which is the portable object supported by the invention typically includes a removable original carrying strap to be placed over the individual’s shoulder for the purpose of transporting the portable object and its contents, leaving the hands free. The weight of all this equipment is typically supported from the shoulders by this shoulder strap, which may have some padding. The jar of each step taken (as the heel of the person carrying the case impacts the ground) accelerates the suspended mass of the case and its contents downward, only to be abruptly brought up by the strap digging into the individual’s shoulder. This energy is transferred to the person’s body through the original carrying strap. The abrupt rebound results in an apparent increase of the weight of the carried items due to the energy build-up during the momentum of the mass, increasing the discomfort on the body of the individual.

[0006] Widening the original carrying strap to dissipate the abrupt rebound energy over a broader area, or increasing the padding to cushion the shoulder has attempted to address this discomfort. What has not been addressed is the increase in apparent weight imparted to the body of the person. The increased stress is transferred to the back musculature and skeletal joints, hastening fatigue and risking injuries to these parts that will become manifest with time and age as repetitive stress disorders and arthritis.

[0007] To solve the above-described problems, the present invention is directed to a short elastic suspender removably attached between a portable object and its original strap that minimizes the above-discussed discomfort. This elastic material has properties that permit resilience and properties of stretching and elongation with rebounding to the original unstrained state that will be readily apparent in the following disclosure, where the term “elastic” as employed in this disclosure refers to fabrics and materials that embody these above characteristics of stretching, flexibility, rebound, etc. in reacting to the weight of the supported object.

SUMMARY OF THE INVENTION

[0008] In view of the foregoing, the present invention, through one or more of its various aspects, embodiments and/or specific features or sub-components, is thus intended to bring out one or more of the advantages, as specifically noted below.

[0009] An object of the present invention is to provide an elastic suspender that attaches between a carrying strap, such as a shoulder strap, and a portable object, such as, but not limited to, for example, luggage, computer cases, purses, golf club bags, sporting equipment, hunting gear, artillery weapons, backpacks, briefcases, musical instrument cases, scientific equipment cases, slings, and the like. The elastic suspender intercepts the shock of each step from reaching the shoulder of the person bearing the weight from the impact of movement, such as walking or jogging.

[0010] The elastic suspender includes a short elastic member, a first connector configured to removably attach a first end of the elastic strap to a portable object, and a second connector configured to removably attach a second end of the elastic strap to a carrying strap of the portable object.

[0011] The elastic suspender attaches to the carrying strap and the portable object by using the original hardware attachments provided on the carrying strap and portable object for connecting them together. The elastic suspender absorbs a rebound energy and releases a force of impact through extension and contraction of a flexing elastic material. As the shock of each step is absorbed and dissipated, the apparent weight of the portable object is not increased and the adverse effects are mitigated. This reduces stress and increases the comfort of the person bearing the burden.

[0012] According to a disclosed embodiment, the short elastic suspender may be capable of supporting approximately 15 lb of weight without substantially extending. However, it is understood that the short elastic suspender can be constructed to support differing weights without extending without departing from the scope and spirit of the invention. Connectors of the elastic suspender may be made of, for example, strong metal or synthetic material. Further, a first connector may be a fastener configured to attach to a bring, and a second connector may be a D-ring.

[0013] Door In The value of the portable object or contents therein—whether a computer, book, musical instrument or other items—can be substantial. For example, if the portable object is a protective carrying case, the value of the objects therein is established by the fact that the user carries them in a protective case. To maintain an expected level of security, one embodiment of a short elastic suspender of the present invention further incorporates a security tether. One end of the tether attaches to the first connector, and the other end attaches to the second connector. The security tether has a higher tensile strength than that of the elastic strap.
The tether may be a cable, a chain, or a strap, for example, and may be made of strong metal or synthetic material. Of course, the material and/or construction of the tether may be varied without departing from the scope and/or spirit of the invention. In a disclosed embodiment, the tether is attached between the first and second connectors in a manner that allows the elastic strap to be stretched. The tether does not interfere with the strap flexing, but reduces the possibility of the portable object dropping to the ground should the connection of the strap be severed or otherwise detached. In a disclosed embodiment, the tether is provided inside of the elastic strap. However, the tether can be constructed so as to cover the strap or be positioned exterior to the strap without departing from the scope and/or spirit of the invention. The elastic strap may be looped through the first and second connectors, and edges of the elastic strap may be stitched or glued to enclose the tether. Of course, other construction methods may be employed to fabricate the strap.

According to a disclosed embodiment, a pair of elastic suspenders is provided, which includes a first elastic suspender and a second elastic suspender. The first elastic suspender includes a first elastic strap, a first connector configured to removably attach a first end of the first short elastic member to a first part of a portable object, and a second connector configured for a first end of a carrying strap of the portable object to be detached from the portable object and removably attached to a second end of the first short elastic member. The second elastic suspender includes a second short elastic member, a third connector configured to removably attach a second end of the first short elastic member to a second part of the portable object, and a fourth connector configured for a second end of the carrying strap of the portable object to be detached from the portable object and removably attached to a second end of the second short elastic member.

The pair of elastic suspenders may include a first security tether and a second security tether. The first security tether has a tensile strength higher than a tensile strength of the first short elastic member, a first end of the first security tether attaches to the first connector, and a second end of the first security tether attaches to the second connector. The second security tether has a tensile strength higher than a tensile strength of the second short elastic member, a first end of the second security tether attaches to the third connector, and a second end of the second security tether attaches to the fourth connector. The first connector and the third connector include a fastener configured to attach to a D-ring on the portable object, and the second connector and the fourth connector include a D-ring to receive the fastener of the original strap furnished with the portable object.

Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following description or may be learned from practice of the invention. The objects and advantages of the invention may be realized and attained as particularly pointed out in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described in detail with reference to the following drawings in which like reference numerals refer to like elements, wherein:

FIG. 1 illustrates a conventional fastener and “D” ring;

FIGS. 2a-2d illustrate conventional items provided with a carrying strap;

FIG. 3 illustrates an elastic suspender according to an embodiment of the present invention;

FIG. 4 illustrates an elastic suspender having a tether according to an embodiment; and

FIG. 5 illustrates the attachment of elastic suspenders to a portable object according to an embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Typically, many portable objects, such as briefcases, computer cases, luggage, and sporting equipment, are provided with, for example, “D” rings for attaching a carrying strap such as a shoulder strap, thereto, as shown in FIG. 1 and depicted as implemented on various items seen in FIGS. 2a through 2d. A typical carrying strap has snap/hook fasteners on each end that are affixed to a portable object by fastening to “D” rings on the portable object. A “D-ring” is a metal ring shaped like the letter “D”, which may attach to the end of a flat strap or loop. The strap is typically looped around or folded on a flat or straight portion of the D-ring to keep the strap oriented properly without bunching or kinking. The portion of the D-ring opposite the flat or straight section may be semi-circular, triangular or a complex shape to keep the position of the fastener in relation to the strap. As portable objects may be provided with a variety of different attachment rings for a carrying strap to attach to, the term, “D-ring”, as employed here includes any ring, loop or the like, which a strap fastener may attach to. While the disclosed embodiment is being described as having “D” rings, it is understood that other types and forms of connectors may be used without departing from the scope and/or spirit of the present invention.

FIG. 3 illustrates an embodiment of an elastic suspender according to the present invention. In the disclosed embodiment, the elastic suspender includes a short elastic member, preferably constructed from a heavy-gauge elastic material, that may be folded to extend between approximately 1” to 6” in length with no weight applied thereto. The short elastic member retains this initial length until the weight applied to the short elastic member becomes in excess of approximately 10 lbs. Of course, the length and weight limits described herein are merely examples for the purpose of describing the present invention, and such limits may be varied to accommodate the abilities of the person carrying the load, the capacities of the carrier and the substances which are to be carried.

If flat, the width of the short elastic member may preferably be between approximately 1” and 4”. However, this dimension may be varied to suit the applicable application of use. Alternatively, the short elastic member may be formed from elasticized rope or “bungee cords”.

In the disclosed embodiments, the short elastic member may be of a color to match conventional luggage, such as black, brown and shades of gray. Furthermore, a pattern may be embossed, embroidered or otherwise
affixed to give an ornamental appearance or convey a sentiment, such as, for example, patriotism or school. One of the advantages of the present invention is that the elastic suspender 10 may be utilized with many different kinds of portable objects having carrying straps 80.

[0028] As shown in FIG. 3, a first end of the short elastic member 20 is looped through a connector, such as, for example, a strong metal or synthetic ring 30, such as a “D” ring. A second end of the short elastic member 20 is looped through a strap opening of a strong metal or synthetic fastener 40, such as a snap fastener. The D-ring and the fastener may be made of strong metal or strong synthetic material, including, but not limited to, for example, nylon or structural plastic. Further alternative embodiments may employ a fastener typically manufactured for other purposes, such as a carabiner fastener normally used for climbing, a spring fastener used for animal control, etc. The fastener may incorporate a swivel, or alternatively, the fastener may remain in a fixed position with relation to the short elastic member 20.

[0029] The ring 30 may employ a shape other than a “D”, such as, but not limited to, for example, other geometric shapes, such as a round, triangular, rectangular or trapezoidal shape, and more complex combinations of shapes designed to maintain a proper relation for holding the fastener in the proper relationship with the short elastic member 20. Further alternative embodiments may employ a D-ring fastener that is split and joined rather than being constructed as one piece, or optionally, welded to form a single unit that will not separate in use.

[0030] In the disclosed embodiment, the short elastic member 20 is looped a number of times until a predetermined tensile strength is reached, where the characteristics are such that the total length is between approximately 1” to 6” and the short elastic member 20 is capable of supporting approximately 15 lbs without substantially extending. As previously noted, these values are intended for illustrative purposes, and they may be varied without departing from the scope and/or spirit of the invention.

[0031] As shown in FIG. 4, an embodiment of the present invention is disclosed in which a tether 50, such as, but not limited to, for example, a strong metal cable, runs between the ring 30 and the fastener 40 of the elastic suspender 10. The length of the tether 50 is selected so as to result in it having a “slack” or belly that permits the short elastic member 20 to move to a desired range of extension. The short elastic member 20 that is attached between the D-ring and the snap/hook fastener so as to elastically connect the D-ring and the snap/hook fastener is folded or looped around in such a manner that it sandwiches the tether 50, and is then stitched or otherwise fastened together to maintain a flat shape, thus forming the elastic suspender 10. However, other methods of forming the suspender may be employed without departing from the scope and/or spirit of the invention. According to various embodiments, the tether 50 may be made of a strong metal chain or a synthetic strap of nylon or other durable material. According to alternative embodiments, in lieu of the tether 50, additional material may be embedded in the elastic strap 20, or the elastic strap 20 may be otherwise reinforced. For example, a metal cable or flexible wire (such as Monel), carbon fiber, or nylon element may be woven into the elastic strap 20, which provides the elastic strap 20 with resistance against severing.

[0032] An example of the use of the present invention will now be presented with reference to FIG. 5. As shown in FIG. 5, a pair of elastic suspenders 10 temporarily connect a shoulder strap 80 to a portable object 90. The fastener 40 of each elastic suspender 10 of the present invention removably attaches to a ring 60, such as a D-ring, associated with the portable object 90 (shown as, for example, a piece of luggage). A snap/hook fastener 70 associated with the original carrying strap 80 is fastened onto the ring 30 of each elastic suspender 10. Thus, the short elastic suspenders 10 attach between the original carrying strap 80 and the portable object 90. Provisions for adjusting the length of the original carrying strap 80 are then exercised to shorten the strap 80 to compensate for the length added by the elastic suspenders 10. In an embodiment in which the elastic suspenders 10 include a tether 50 attached between the fastener 40 and the ring 30, should the elastic strap 20 snap or tear, the tether 50 of the elastic suspender 10 prevents the portable object 90 from detaching from the shoulder strap 80.

[0033] The present invention can be applied to generally two categories of portable objects: robust objects and sensitive objects. Suitcases and briefcases are constructed to withstand rough treatment, for example, by baggage handlers, and thus, require less protection from hazards. However, a user may desire additional security against dropping for more sensitive cargo, such as, but not limited to, for example, computers, musical instruments, and optical and scientific instruments. Consequently, the present invention is applicable to elastic suspenders that (1) provide basic insulation against shock and weight, and (2) that add a measure of security provided by the security tether.

[0034] Further alternative embodiments of the present invention may employ combinations of snap/hooks and fasteners other than those described above, such as fasteners at both ends or D-rings at both ends.

[0035] Although FIG. 5 illustrates two elastic suspenders 10 connected between the shoulder strap 80 and the portable object 90, a user may connect only one elastic suspender 10 to the portable object 90, particularly where one end of the shoulder strap 80 is permanently attached to the body of the portable object 90. Where a portable object applies a symmetrical burden on a carrying strap, such as with a case or luggage, it is advantageous to utilize a pair of elastic suspenders 10, where one elastic suspender 10 connects to each end of the carrying strap. However, where a portable object applies more of a burden to one end of a carrying strap than the other does, such as with a golf bag, it may be advantageous to utilize only a single elastic suspender 10, at the end of the carrying strap which is more heavily burdened.

[0036] Still further alternative embodiments may incorporate the elastic suspender into each end of a shoulder strap, for use as a replacement or provided with a portable object, where the free end of the shoulder strap includes an elastic strap area and terminates in a snap fastener to be attached to the portable object.

[0037] Further alternative embodiments may incorporate the elastic suspender in each side of the portable object when manufactured or refitted, with the elastic strap affixed to the portable object and presenting a connector, such as, for example, a “D” ring for the shoulder strap to clip onto.
0038] It is envisioned that the elastic suspender of the present invention may be utilized with various kinds of portable objects having a carrying strap, such as, but not limited to, luggage, computer cases, purses, golf club bags, sporting equipment, hunting gear, artillery weapons, backbacks, briefcases, musical instrument cases, scientific equipment cases, slings, and the like.

0039] The foregoing embodiments and advantages are merely exemplary and are not to be construed as limiting the present invention. The present teaching can be readily applied to other types of apparatuses. The description of the present invention is intended to be illustrative, and not to limit the scope of the claims. Many alternatives, modifications, and variations will be apparent to those skilled in the art. In the claims, means-plus function clauses are intended to cover the structure described herein as performing the recited function and not only structural equivalents but also equivalent structures.

1-20. (canceled)
21. An apparatus to be attached between a portable object and its detachable shoulder strap, comprising:
   an elastic suspender for removable attachment between the carrying strap and the portable object, the elastic suspender sized to be from one to six inches in length;
   a first connector configured to removably attach the elastic suspender to the portable object; and
   a second connector on the elastic suspender configured to receive a fastener on the carrying strap.
22. The elastic suspender according to claim 21, wherein the elastic strap is capable of supporting approximately 15 lb without substantially extending.
23. The elastic suspender according to claim 21, wherein the second connector comprises a D-ring.
24. The elastic suspender according to claim 21, wherein the second connector comprises one of metal and synthetic material.
25. The elastic suspender according to claim 21, wherein the first connector comprises a fastener configured to attach to a D-ring.
26. The elastic suspender according to claim 21, wherein the first connector comprises one of metal and synthetic material.
27. The elastic suspender according to claim 21, wherein at least one of the first connector and the second connector comprises a swivel.
28. The elastic suspender according to claim 21, further comprising a security tether having a tensile strength higher than a tensile strength of the elastic strap, a first end of the tether attaching to the first connector, a second end of the tether attaching to the second connector.
29. The elastic suspender according to claim 28, wherein the tether comprises one of a cable, a chain, and a strap.
30. The elastic suspender according to claim 28, wherein the tether comprises one of metal and synthetic material.
31. The elastic suspender according to claim 28, wherein the tether is attached between the first connector and the second connector in a manner that allows the elastic strap to be stretched.
32. The elastic suspender according to claim 28, wherein the tether is provided inside of the elastic strap.
33. The elastic suspender according to claim 32, wherein the elastic strap is looped through the first and second connectors, and edges of the elastic strap are fastened together to enclose the tether.
34. An apparatus to be attached between a portable object and one end of a detachable shoulder strap, comprising:
   an elastic suspender for removable attachment between the carrying strap and the portable object, the elastic suspender sized to be from one to six inches in length;
   a first connector configured to removably attach the elastic suspender to the portable object; and
   a second connector on the elastic suspender configured to receive removable attachment by a fastener extending from the carrying strap; and
   a security tether attached between the first and second connectors.
35. The elastic suspender according to claim 34,
   wherein the first connector comprises a fastener configured to attach to a ring, and the second connector comprises a ring.
36. The elastic suspender according to claim 35, wherein at least one of the first connector and the second connector comprises a swivel.
37. A pair of apparatuses, each apparatus to be attached between a portable object and one of the opposing ends of a detachable shoulder strap, comprising:
   a pair of elastic suspenders, each elastic suspender having a first and a second end for removable attachment between a first end of the detachable shoulder strap and a ring on a first end of the portable object;
   a first connector configured to removably attach the first end of the first elastic suspender to a first side of the portable object; and
   a second connector on the second end of the first elastic suspender configured to removably receive a fastener on the first end of the carrying strap; and
   a third connector configured to removably attach the first end of the second elastic suspender to a second end of the portable object; and
   a fourth connector on the second end of the second elastic suspender configured to removably receive a fastener on the second end of the carrying strap.
38. The pair of apparatuses according to claim 37, further comprising at least one of:
   a first security tether having a tensile strength higher than a tensile strength of the first elastic strap,
   a first end of the first security tether attaching to the first connector,
   a second end of the first security tether attaching to the second connector; and
   a second security tether having a tensile strength higher than a tensile strength of the second elastic strap,
a first end of the second security tether attaching to the third connector,
a second end of the second security tether attaching to the fourth connector.
39. The pair of apparatuses according to claim 38, wherein the first connector and the third connector comprises a fastener configured to attach to a D-ring.

40. The pair of apparatuses according to claim 38, wherein the second connector and the fourth connector comprises a D-ring.
41. The elastic suspender according to claim 38, wherein at least one of the first connector, the second connector, the third connector and the fourth connector comprises a swivel.