ABSTRACT

A zipper locking device comprising hook-loop material adapted to couple to a first zipper slide and hook-loop material adapted to couple a second zipper slide to the first zipper slide. The interlocking hook-loop zipper pulls keep dual zipper sliders in a closed position until the hook material is separated from the loop material.
FIELD OF THE INVENTION

This invention generally relates to zippers.

BACKGROUND

Zippers are found on many mobile personal storage articles such as backpacks, duffle bags and luggage cases. Often, these zippers are comprised of zipper teeth located on a first zipper track, a correspondingly aligned opposing second zipper track, and a pair of zipper sliders coupled to the two zipper tracks. The pair of sliders may be opposingly coupled to the two zipper tracks.

Dual zipper slider arrangements are often used to allow a person to create an opening along the zipper tracks at a specific location, whereas a single zipper slider only allows an opening in the tracks to begin where the zipper slider is initially coupled to the zipper tracks—typically at one end of the tracks. Dual opposing sliders are used to create such an opening. In such an embodiment, each slider typically slides in a direction opposite the other slider in order to perform a similar function. For example, a first slider may be coupled to a first end of the correspondingly aligned zipper teeth and a second slider may be coupled to a second end of the teeth. As each slider slides along the teeth towards each other, the teeth mate, closing the zipper. When the two zippers meet, the entire length of the zipper is substantially closed.

Prior art devices exist to ensure dual zipper sliders stay in a substantially closed position upon meeting. For example, U.S. Pat. No. 4,350,375 describes a dual-slider zipper where the first slider has an extension similar to a pin and the second slider has a rotatable attachment with a recessed portion adapted to receive the pin. When the two sliders are in a position proximal to one another, the second slider attachment rotates, receiving and snapping the pin into place, locking the two sliders to each other.

Similarly, U.S. Pat. No. 6,467,135 describes a mechanism adapted to couple two zipper sliders to each other by placing a first zipper slider attachment through a second zipper slider attachment wherein the first zipper slider attachment couples to the second zipper slider attachment, locking the zipper sliders to each other.

Other devices have been developed to perform substantially the same function. For example, devices have been developed to secure a zipper slider in a specific location along the zipper track. These devices may be used to secure the zipper slider in a closed position. For example, in Patent Cooperation Treaty Application No. PCT/US2004/026770, a zipper locking mechanism is described that uses a hook-loop material such as Velcro®. The device includes a flap proximal to one zipper track, the flap including either the hook or the loop material. Proximal to the other zipper track is the other of the hook or loop material, with the flap adapted to fold over the track when a zipper slider is located proximal the flap. The pressure of the flap on the slider keeps the slider in place.

Each of these dual zipper locking devices are deficient in their design, being expensive to manufacture and cumbersome to use. The devices are also prone to failure, as their design allows the mechanisms to frequently fail.

SUMMARY OF THE DRAWINGS

FIG. 1A is a top view of a locking zipper pull placed through a zipper slider bore according to one embodiment of the invention.

FIG. 1B is an isometric view of a locking zipper pull placed through a zipper slider bore and folded over according to one embodiment of the invention.

FIG. 1C is an isometric view of a locking zipper pull placed through a zipper slider bore, folded over, and placed through a pull slot according to one embodiment of the invention.

FIG. 1D is an isometric view of a locking zipper pull placed through a zipper slider bore, folded over, placed through a pull slot and pulled tight according to one embodiment of the invention.

FIG. 2 is a side view of a locking zipper pull placed through a zipper slider bore, folded over, and placed through a pull slot according to one embodiment of the invention.

FIG. 3 is a top view of two typical zipper sliders without zipper pulls attached thereto.

FIG. 4 is an isometric view of two zipper sliders with coupled zipper pulls according to one embodiment of the invention.

FIG. 5 is an isometric view of a locking zipper pull according to one embodiment of the invention.

DETAILED DESCRIPTION

One embodiment of the invention comprises a pair of locking zipper slider pulls. The pulls are typically adapted for use on a zipper with two zipper sliders. In one embodiment, one pull of the pair is coupled to each slider of the two zipper sliders, enabling the zipper sliders to be locked to each other. An embodiment may use a hook-loop material on the zipper pulls to couple the sliders to one another.

Unlike prior art devices, one embodiment is easy and inexpensive to make, install, use, and maintain. One way an embodiment improves over the prior art is through eliminating the need of an injection mold for each of the zipper pulls, as some prior art required intricate development of polymeric molding slider pulls which were adapted to couple to one another in order to couple the zipper sliders together. Additionally, as many existing personal mobile storage devices do not need to be modified in order to use the device, the zipper pulls may be coupled directly to existing zipper sliders, which increases the number of dual-zipper slider articles which may use embodiments of the zipper slider locking devices. Embodiments are also less expensive to make than prior art devices, as one embodiment uses existing material (such as Velcro® hook-loop material) shaped for use on a pair of zipper sliders to lock the sliders to one another. The simplicity of the zipper pulls also enables creation of a zipper lock which lasts longer than prior art zipper slider locking devices—with minimal maintenance, such as cleaning. If a zipper pull does break, it may be easily replaced at a low cost.

A pair of zipper pulls may be referred to as a zipper locking device. One zipper locking device is comprised of a first piece and a second piece. The first piece may be a generally hourglass-shaped hook material and the second piece may be a generally hourglass-shaped loop material. The hook
material may be coupled to a first zipper slider and the loop material may be coupled to a second zipper slider. In one embodiment, the hook and the loop material have front side, a back side, a top end and a bottom end. The front side may comprise the hook or loop texture of the material, and the back side may be generally smooth. Proximal to the top end or the bottom end of one embodiment, and located within a top portion or a bottom portion, respectively, may be a slot, the slot piercing through the front side and the back side. The slot length is generally one-half the length of a widthwise edge of the top portion or the bottom portion. The slot may not have a width as minimal, if any, material may be removed during slot creation. Extending between the top portion and bottom portion of one embodiment is an middle portion. The middle portion may have a generally parabolic shape although this shape may vary significantly and substantially in variations and other embodiments.

In one embodiment, to couple the hook-loop material to the respective zipper slider, one of the top end or the bottom end is placed through a bore in the zipper slider and looped around a slider portion. The pull may be looped around a slider portion such as the slider end. The top end or bottom end of the slider pull is then threaded through the slot located proximal the opposing zipper pull end. The end which is threaded through the slot is then pulled tight against the slider portion. Upon coupling the hook material or the loop material to the zipper slider, a user may hold onto an end of the material to pull the material and coupled zipper slider in order to open and close the zipper.

When both a hook material and a loop material are coupled to a respective zipper slider, in one embodiment the sliders are positioned proximally to one another. The loop material is then pressed against the hook material. Pressing the two materials against each other substantially locks the zipper sliders in position relative to each other. Although the zipper sliders may then slide along the zipper tracks, if either zipper slider moves, the coupled hook-loop material pulls the other zipper slider along. By the zipper slider pair generally being opposing zipper sliders, when the pair moves in unison, the zipper track stays substantially closed. To open the zipper, the hook and loop material is pulled apart, and the zippers are then moved apart from each other. This operation may be done manually.

TERMINOLOGY

The terms and phrases as indicated in quotation marks (“ ”) in this section are intended to have the meaning ascribed to them in this Terminology section applied to them throughout this document, including in the claims, unless clearly indicated otherwise in context. Further, as applicable, the stated definitions are to apply, regardless of the word or phrase’s case, tense or any singular or plural variations of the defined word or phrase.

The term “or” as used in this specification and the appended claims is not meant to be exclusive rather the term is inclusive meaning “either or both”.

References in the specification to “one embodiment”, “an embodiment”, “a preferred embodiment”, “an alternative embodiment”, “a variation”, “one variation”, and similar phrases mean that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least an embodiment of the invention. The appearances of phrases like “in one embodiment”, “in an embodiment”, or “in a variation” in various places in the specification are not necessarily all meant to refer to the same embodiment or variation.

The term “couple” or “coupled” as used in this specification and the appended claims refers to either an indirect or direct connection between the identified elements, components or objects. Often the manner of the coupling will be related specifically to the manner in which the two coupled elements interact.

The term “integrate” or “integrated” as used in this specification and the appended claims refers to a blending, uniting, or incorporation of the identified elements, components or objects into a unified whole.

Directional and/or relational terms such as, but not limited to, left, right, nuder, apex, top, bottom, vertical, horizontal, back, front and lateral are relative to each other and are dependent on the specific orientation of a applicable element or article, and are used accordingly to aid in the description of the various embodiments and are not necessarily intended to be construed as limiting.

As applicable, the terms “about” or “generally” as used herein unless otherwise indicated means a margin of ±20%. Also, as applicable, the term “substantially” as used herein unless otherwise indicated means a margin of ±10%. It is to be appreciated that not all uses of the above terms are quantifiable such that the referenced ranges can be applied.

One Embodiment of a Zipper Locking Device

As best shown in FIGS. 2 through 5, an embodiment of a zipper locking device 10 is shown. In one version, the device is comprised of a pair of locking slider pulls 12, with a version of one of the slider pulls shown in FIG. 5. As shown in FIG. 4, the slider pulls may be coupled to a first slider 14 and a second slider 16, with the slider pulls employing a hook-loop material to lock the first slider to the second slider. Other adhesive materials may couple the first slider to the second slider such as, but not limited to, an adhesive tape. In yet other variations, other non-adhesive coupling means can be employed including but not limited to snaps, buttons.

The slider pull 12 may be comprised of hook-loop material which is flexible. In one embodiment, the individual hook and loops may be comprised of a polymeric resin. The hook and loops may be coupled or integrated to a flexible plastic or the slider pull may also be comprised of a fabric such as, but not limited to, cotton. Other suitable materials are also contemplated.

One embodiment’s first slider 14 may oppose the second slider 16. The sliders may oppose each other in a manner where the first slider’s input end 18 is located proximal the second slider’s input end 18 when the sliders are in a substantially closed position. In another embodiment, a first slider output end 19 may be located proximal the second slider output end or input end when the sliders are in a substantially closed position.

The input end 18 of a zipper slider is the end of the slider that receives a pair of correspondingly aligned zipper tracks 2. In entering the input end of the slider, the zipper tracks are in an open position, not in a matingly coupled position. The output end 19 of a slider is the end of the slider that ejects the zipper tracks in a coupled position. Therefore, as the zipper enters the input end of the slider, the zipper is typically “open” and as the zipper exits the output end, the zipper is typically “closed”. Dual-slider zippers are often
designed to create a single opening along the zipper tracks, by coupling the sliders to the tracks at the two track ends, respectively.

[0032] One embodiment’s first slider 14 may couple to a first piece zipper pull which may be comprised of hook material and one embodiment’s second slider 16 may couple to a second piece which is a loop material zipper pull. Another embodiment may have more than two zipper pulls or may have a first slider coupled to loop material. An embodiment may even have zipper pulls coupled to two or more zipper sliders. Each slider may have a slider pull having both hook or loop material or a plurality of pulls with hook or loop material.

[0033] As best shown in FIG. 5, a slider pull 12 may be generally hourglass shaped. Other slider pull shapes are contemplated such as, but not limited to, a slider pull generally having an “I” shape. The slider pull may have a first end 20, a second end 22, and a middle portion 21. In one embodiment, the middle portion extends between a first portion 23 and a second portion 25. An embodiment may have an integrated first portion, middle portion, and second portion. In other embodiments, the middle portion may be coupled to the first and second portion.

[0034] An embodiment’s first end 20 may comprise an end of the first portion 23, the first end also having a first width 38. The first end may oppose a first portion-middle portion integration. Similarly, the second end 22 may have a second width 38 and comprise an end of the second portion 25 which opposes a second portion-middle portion integration. The first and second portions may also have a first length 29 and second length 29, respectively. In one embodiment, the first and second widths and lengths are generally equal to about ½ an inch.

[0035] The middle portion may have two sides edges 24 extending between the first portion and the second portion, with the side edges creating a generally parabolic shape and giving the pull it’s generally hourglass shape. The middle portion generally has a third width, with one embodiment’s third width being significantly less than the first and second widths. Another embodiment’s middle portion side edges may not have a generally parabolic shape and may have generally straight side edges. In one embodiment, the middle portion 21 may have a length of about ½ inch and a width of about ½ an inch at its widest location and about ¼ an inch at its narrowest location.

[0036] The zipper slider pull 12 in one embodiment is also comprised of a slot 26. The slot may be an opening located in either the first portion 23 or the second portion 25, although one embodiment may have a slot in both the first portion and the second portion, or may have a slot in the middle portion. The slot in one version is adapted to receive the end of the pull opposing the end the slot is located within. For example, a first portion slot may be adapted to receive the second end 22. A middle portion slot may be adapted to receive either the first portion or the second portion. The slot 26 may receive the opposing end of the zipper pull by the slider pull curling towards the slot. The slot length in one embodiment is about ½ of the length of the end of the portion the slot is located in. In other embodiments, the slot is about ½ the length of the portion the slot is located in. In still other embodiments, the slot may be about ½ the length of the end or portion the slot is not located in. In one embodiment, the slot length is from 25% to 75% the width of the first portion or the second portion.

[0037] The hourglass or “I” shape of one embodiment of a zipper pull is important to hold the pull in its looped configuration. For example, upon the slot receiving the opposing zipper pull end and that portion of the zipper pull is pulled through the slot and the middle portion begins to be pulled through the slot, the zipper pull is generally kept in the looped position. This is because the middle portion width is significantly less than the width of the first or second portions. As the first or second portions are wider than the first or second portions, the first or second portions are generally more difficult to fit through the slot. Therefore, the first and second portions typically not pull back through the slot, essentially “undoing” the loop, unless the zipper pull portion is manually pulled back through the slot.

[0038] Often, the zipper locking device is adapted to lock a zipper on a personal mobile storage article or device such as, but not limited to, a suitcase or a duffle bag. The article’s zipper may have first and second zipper tracks coupled to a first and second edge of an opening for a compartment within the storage device or article. The zipper also may have first and second zipper sliders which are coupled to the first and second zipper tracks, with the sliders being coupled to the tracks in different directions, the first slider sliding if a first direction to open the zipper and the second slider sliding in a second direction to open the zipper.

One Method of Using a Zipper Locking Device:

[0039] As best shown in FIGS. 1A through 1D, and FIG. 4, a method of locking a zipper is exemplified. For example, as best shown in FIGS. 1A through 1D, the zipper pull slot 26 may used to couple the slider pull 12 to a zipper slider 30. To do so, in one embodiment, the first end 20 of the pull may be placed through a zipper slider bore 31. In one embodiment, the first end is pulled through the bore and that portion of the first portion 23 is substantially through the bore. In one embodiment, the zipper pull 12 has a front side 27 and a back side 28. As the first end 20 is threaded through the slider bore 31, the front side may face towards the body of the slider 30 and the back side may face away from the body of the slider.

[0040] In one embodiment, the pull 12 is threaded through the slider bore 31 to a position where the middle portion 21 is proximal a zipper slider end 40. As shown in FIG. 1B, the second end 22 may then be folded over the zipper slider end towards the pull first end 20, exposing the pull front side 27. The front side in one embodiment is the side having the hook or loop material.

[0041] As the second end 22 nears the slider pull slot 26, the second end and second portion 25 is fit into the slot. In one embodiment, the second portion may fit into the slot by bending, folding, and squeezing the second portion into the slot. The slot edges may need to bend in order to be received within the slot. In embodiment, the slider pull may bend as it is comprised of a thin flexible polymeric material. Flexible material such as nylon may be used.

[0042] As the second portion 25 fits through the slot 26, the middle portion 21 is threaded through the slot. As the middle portion threads through the slot, the middle portion begins to tighten against the zipper slider end 40. Upon tightening, as best shown in FIG. 1D, the middle portion and the first portion are elapsed around the zipper slider end 40.

[0043] Upon tightening the slider pull 12 against a first zipper slider 30, a second slider pull 12 is coupled to a second zipper slider 30 in substantially the same manner as the first slider pull is coupled to the first zipper slider. The first zipper
slider pull may be referred to as a first piece and the second zipper slider pull may be referred to as a second piece. The second zipper slider pull is generally similar to the first zipper pull, except that at least a portion of the front side 27 has the other of the hook and loop material that the first zipper pull does not have.

Upon coupling the two zipper pulls 12 to the zipper sliders 30, the front side 27 of the zipper pull coupled to the first zipper slider 14 is pressed against the front side of the zipper pull coupled to the second zipper slider 16 to couple the two zipper pulls to each other. The two zipper pulls are typically removably coupled to one another, as a user may pull the two pulls apart. An embodiment may also have more than two zipper sliders or more than two zipper slider pulls, and therefore, more than two zipper slider pulls are pressed together. As the two zipper slider pulls contact, the hook material mates with the loop material in one embodiment. In another embodiment, the adhesive material of one slider pull may mate with the material of the other slider pull. An embodiment may use hook-loop material such as Velcro®.

In one embodiment, the width 38 of a zipper pull 12 first portion 23 and second portion 25 may be generally equal. An embodiment may have generally unequal widths as well. In one embodiment, the widths of each may be ½ an inch. One embodiment may have a width up to ¾ of an inch, and another embodiment may have a width about ⅛ of an inch. The length 29 of the first portion and the second portion may also be ½ an inch in one embodiment. Other embodiments may have first and second portions that have different or unequal lengths.

For example, an embodiment is contemplated that may have hook and loop zipper pulls 12 which have a generally triangular first portion 23 and second portion 25. In such an embodiment, a side of the triangle in each portion may be integrated to the middle portion, with an end such as, but not limited to, the first end 20 or the second end 22, of the portion having a triangle point. As the hook and loop zipper pulls are pressed together, the angled sides of the first or second portion of the hook material may extend over the angled sides of the first or second portion of the loop material. The part of the first and second portion that extends over the sides of the correspondingly coupled material may be called “flaps”. In one embodiment, the flaps may be used by a person to hold onto at least one of the zipper pulls, and used to pull the material away from the other of the hook or loop material, in order to separate the hook material from the loop material.

The width 32 of the middle portion 27 may vary in one embodiment. For example, the width of the middle portion may be greatest at the middle portion’s integration to the first portion 23 and the second portion 25. The middle portion’s width may be smallest at the centerline 33 of the middle portion. In one embodiment, as best shown in FIG. 5, the width of the middle portion may expand generally parabolically from the middle portion to the first portion and the second portion integration. In another embodiment, the width of the middle portion may expand from the centerline to the first and second portion integration linearly. The middle portion may generally create a first piece coupled to a first zipper slider and a second piece coupled to a second zipper slider which resembles a two-dimensional hourglass shape.

Whatever the type of material is used for the zipper pulls 12, the pulls are generally flexible. The pulls are also generally resilient to wear and tear. In one embodiment, the zipper pulls are made out of nylon.

Other Embodiments and Variations

The embodiments of the flexible container filling device as illustrated in the accompanying figures and described above are merely exemplary and are not meant to limit the scope of the invention. It is to be appreciated that numerous variations to the invention have been contemplated as would be obvious to one of ordinary skill in the art with the benefit of this disclosure.

1 claim:

1) A zipper locking device comprising,
   a first piece comprised of loop material adapted to couple to a first zipper slide; and
   a second piece of hook-loop material adapted to couple to a second zipper slide, the second piece being adapted to removably attach with the first piece.

2) A combination including the zipper locking device of claim 1, a zipper and the first and second zipper slides, each zipper slide being slidably attached to the zipper wherein, the first zipper slide opposes the second zipper slide.

3) The zipper locking device of claim 1 wherein, each of the first and second pieces have:
   a first end having a first width;
   a second end having a second width; and
   a middle portion having a third width, the third width being significantly less than both the first and second widths.

4) The zipper locking device of claim 3 wherein, proximal one of the first end or the second end of each of the first and second pieces includes a slot, the slot being adapted to receive the other of the first end and the second end.

5) The zipper locking device of claim 3 wherein, a length of the slot is substantially about 50% a length of at least one of the first and second ends.

6) The zipper locking device of claim 3 further including, a first portion integrated to the first end;
   a second portion integrated to the second end; and
   the middle portion (i) integrated to the first and second portions, and (ii) having two side edges extending between the first and second portions, the two side edges creating a generally parabolic middle portion.

7) The zipper locking device of claim 6 wherein, the first and second portions have first and second lengths respectively with each of the first and second portions forming a generally rectangular shape, the first and second widths and the first and second lengths all having a dimension of about ⅛ inch; and
   the middle portion is about 1 inch in length, with a middle width of about ½ inch at its widest location and about ¼ inch at its narrowest location.

8) A method of coupling two zipper sliders, the method comprising:
   coupling a first piece comprising a hook material to a first zipper slider;
   coupling a second piece comprising a loop material to a second zipper slider; and
   coupling the hook material to the loop material.

9) The method of claim 8 wherein,
   each of the first and second pieces having a two-dimensional hourglass shape.

10) The method of claim 8 further including, placing the first zipper slider proximal the second zipper slider, the second zipper slider generally opposing the first zipper slider.
11) The method of claim 10 further including:
said coupling of a first piece comprising a hook material to
a first zipper slider further comprises placing a first end
of the first piece through a slot proximal an opposing
second end of the first piece; and
said coupling of a second piece comprising a loop material
to a second zipper slider further comprises placing a first
end of the second piece through a slot proximal an
opposing second end of the second piece.
12) The method of claim 8 further including, pressing the
first piece firmly against the second piece.
13) The method of claim 12 further including:
sliding a first zipper slider in a direction opposing the
second zipper slider; and
the hook-loop material coupled to the first and second
zipper sliders pulling the second zipper slider in the
direction the first zipper slider is moving.
14) The method of claim 8 wherein, the hook material and
the loop material is Velcro®.
15) The method of claim 11 wherein,
the hook material first portion and hook material second
portion are comprised of generally triangular shapes,
with a width and a length of about ½ inch long; and
the loop material first portion and loop material second
portion are comprised of generally triangular shapes,
with a width and a length of about ½ inch long.
16) A combination comprising:
a mobile personal storage article including a compartment
with an access opening having opposing first and second
opening edges, the first and second opening edges have
respective first and second zipper tracks attached thereto;
a first zipper slide slidably and simultaneously coupled to
the first and second zipper tracks wherein slidable move-
ment along the zipper tracks (i) in a first direction inter-
locks the zipper tracks together, and (ii) in an opposite
second direction separates the zipper tracks from each other;
a second zipper slide slidably and simultaneously coupled
to the first and second zipper tracks wherein slidable
movement along the zipper tracks (i) in the second direc-
tion interlocks the zipper tracks together, and (ii) in the
first direction separates the zipper tracks from each other;
a first piece comprised of hook material, the hook material
being adapted to releasably couple to a corresponding
loop material, the first piece comprising first and second
end portions joined by way of an intervening middle
portion, a width of the middle portion at its narrowest
location being about half a width of the second end
portion, wherein the first end portion includes a slot
formed therein, a length of the slot being between
25-75% the width of the second portion; and
a second piece comprised of the loop material, the loop
material being adapted to releasably couple to the cor-
responding hook material, the second piece comprising
first and second end portions joined by way of an inter-
vening middle portion, a width of the middle portion at
its narrowest location being about half a width of the
second end portion, wherein the first end portion
includes a slot formed therein, a length of the slot being
between 25-75% the width of the second portion; and
wherein (a) the first piece is coupled to first slider by
passing the first piece partially through an opening on
the first slider and looping the first piece around the
opening by passing the second end portion completely
through the slot, and (b) the second piece is coupled to
second slider by passing the second piece partially
through an opening on the second slider and looping the
second piece around the opening by passing the second
end portion completely through the slot.
17) The combination of claim 16 wherein,
the second end portion of the first piece and the second end
portion of the second piece are removably coupled
thereto; and
the length of the slot is substantially 50% of the length of
the width of the second end portion.
18) The combination of claim 16 wherein, the width of the
middle portion is less than or equal to the length of the slot.
19) The combination of 16, wherein lengthwise edges of
the middle portion of each of the first and second pieces are
parabolically shaped.
20) The combination of claim 16, wherein the width of the
first end portion is substantially similar to the width of the
second end portion on both the first and second pieces.

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