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(54) **WEIGHTED BAG**

GEWICHTETER BEUTEL

SAC LESTÉ

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Description

BACKGROUND OF THE DISCLOSURE

1. Field of the Disclosure

[0001] The disclosure relates in general to weightlifting devices, and more particularly, to a weighted bag for use in various weightlifting and other exercises.

2. Background Art

[0002] The use of different devices in the lifting of weights and general exercising is well known in the art. Many such exercises and lifts generally utilize a rigid or solid weight that is coupled to a handle, a bar or a cable and pulley system. Such devices include lat machines, barbells, kettlebells, dumbbells and the like.

[0003] Increasingly, however, dynamic, or shape changing devices have been utilized. These devices include, but are not limited to shape changing platforms, such as hemispherically shaped structures which are semi-rigid, inflatable structures and the like. Other such devices include balls or bags that can be lifted, carried, thrown or otherwise manipulated.

[0004] Problematically, these non-rigid, flexible devices tend to experience unpredictable forces and non-uniform loading depending on how they are manipulated and/or how they are grasped, dropped or otherwise impacted. At the same time, the material from which such devices are made, by definition, are generally flexible and capable of shape changing. Moreover, where a handle or the like is introduced, the coupling of the handle to the bag is problematic and often a source of deterioration, degradation and failure of the bag. For example openings, tears, rips and the like are often formed proximate the stitching or other joining between the handle and the bag panels, as stress concentrations are experienced in such locations.

[0005] Document US2012/149536A shows a weighted exercise tubular bag to be filled with e.g. send, and provided with a pair of handles running substantially perpendicular to the length of bag body with grips positioned atop the tubular bag.

BRIEF SUMMARY

[0006] The present invention relates to a bag for weightlifting and similar exercises as defined in claim 1.

[0007] Other aspects of the disclosure relate to a bag configured to be filled with a filler material, including a shell having a central body portion that is elongated between opposed first and second ends and has a top and a bottom extending between the first and second ends, where the central body portion and the first and second ends of the shell combine to define and enclose an inner cavity configured for containing the filler material, and where the shell has an opening providing access to the inner cavity and a closure mechanism configured for selectively opening and closing the opening, as well as a handle assembly engaged with the shell. The handle assembly includes a first gripping member connected to the shell proximate a first juncture between the top and the first end and a second gripping member connected to the shell proximate a second juncture between the top and the second end. The first gripping member extends outward from the shell at an oblique angle to at least one of the top, the first end, and the lateral centerline, and the second gripping member extends outward from the shell at an oblique angle to at least one of the top, the second end, and the lateral centerline.

[0008] According to one aspect, the first gripping member includes a first loop having ends connected to front and rear sides of the shell, and the second gripping member includes a second loop having ends connected to the front and rear sides of the shell.

[0009] According to another aspect, the shell is formed of a single panel extending around front and rear sides of the shell and connected to itself by seams at the first and second ends and a lateral seam extending between the first and second ends. In one configuration, the lateral seam extends across the rear side of the shell, and the opening is defined on the front side of the shell.

[0010] According to a further aspect, the handle assembly further includes a first base connected to the shell and extending on the front side and the rear side of the shell and having a first crossing portion extending over the top between the front side and the rear side proximate a first juncture between the top and the first end, and a second base connected to the shell and extending on the front side and the rear side and having a second crossing portion extending over the top between the front side and the rear side proximate a second juncture between the top and the second end. The first gripping member is connected to the first base and extends outward from the first base, and the second gripping member is connected to the second base and extends outward from the second base. In one configuration, the first crossing portion has a first inner edge and the second crossing portion has a second inner edge, and the first and second inner edges each form angles of 80-100° with the top of the shell.

[0011] According to yet another aspect, the shell has a rectangular shape defined by the top, the bottom, and the first and second ends, and/or the shell is configured to have an oval shape when viewed from the first or second end when filled.

[0012] According to a still further aspect, the shell has a length measured between the first and second ends and a height measured between the top and the bottom, and the length is at least two times the height.

[0013] Other aspects of the disclosure relate to a bag configured to be filled with a filler material, including a shell having a front side and a back side and having a central body portion and opposed first and second ends, the central body portion having a top and a bottom ex-

tending between the first and second ends, where the central body portion and the first and second ends of the shell combine to define and enclose an inner cavity configured for containing the filler material, and where the shell has an opening providing access to the inner cavity, as well as a handle assembly engaged with the shell. The handle assembly includes a first base connected to the shell and extending on the front side and the rear side and having a first crossing portion extending over the top between the front side and the rear side proximate a first juncture between the top and the first end, a first gripping member connected to the first base and extending outward from the first base, a second base connected to the shell and extending on the front side and the rear side and having a second crossing portion extending over the top between the front side and the rear side proximate a second juncture between the top and the second end, and a second gripping member connected to the second base and extending outward from the second base. The first crossing portion has a first inner edge and the second crossing portion has a second inner edge, and the first and second inner edges each form angles of 80-100° with the top of the shell.

[0014] According to one aspect, the first base further includes a first front angling portion extending on the front side of the shell to the top of the shell at oblique angles to the first end and the top of the shell and a first rear angling portion extending on the rear side of the shell to the top of the shell at oblique angles to the first end and the top of the shell, where the first crossing portion extends between the first front angling portion and the first rear angling portion. In one configuration, the first front angling portion extends on the front side of the shell from the first end to the top of the shell, and the first rear angling portion extends on the rear side of the shell from the first end to the top of the shell. In an additional configuration, the second base further includes a second front angling portion extending on the front side of the shell from the second end to the top of the shell at oblique angles to the second end and the top of the shell and a second rear angling portion extending on the rear side of the shell from the second end to the top of the shell at oblique angles to the second end and the top of the shell, where the second crossing portion extends between the second front angling portion and the second rear angling portion. In a further configuration, the first crossing portion forms juncture angles with the first front angling portion and the first rear angling portion that are 110-140°. In yet another configuration, the first crossing portion has a first width between the first inner edge and a first outer edge of the first crossing portion, and the first front angling portion and the first rear angling portion have widths defined between inner and outer edges thereof, where the first width is smaller than the widths of the first front angling portion and the first rear angling portion. In a still further configuration, the first base is formed of a continuous panel, and the first base is folded over itself at the first crossing portion, such that a first surface of the continuous panel forms an outer surface of the first front angling portion and an inner surface of the first rear angling portion.

[0015] According to another aspect, the shell has a lateral centerline extending between the first and second ends, where the first gripping member extends outward from the first base at an oblique angle to at least one of the top, the first end, and the lateral centerline, and the second gripping member extends outward from the first base at an oblique angle to at least one of the top, the second end, and the lateral centerline.

[0016] According to a further aspect, the first gripping member includes a first loop having ends connected to the first base on the front and rear sides of the shell and the second gripping member includes a second loop having ends connected to the second base on the front and rear sides of the shell.

[0017] According to yet another aspect, the shell is formed of a single panel extending around the front and rear sides and connected to itself by seams at the first and second ends and a lateral seam extending between the first and second ends. In one configuration the lateral seam extends across the rear side of the shell, and the opening is defined on the front side of the shell.

[0018] According to a still further aspect, the shell has a rectangular shape defined by the top, the bottom, and the first and second ends, and/or the shell is configured to have an oval shape when viewed from the first or second end when filled.

[0019] Other features and advantages of the disclosure will be apparent from the following description taken in conjunction with the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The disclosure will now be described with reference to the drawings wherein:

Figure 1 is a front perspective view of one embodiment of a weighted bag which is not part of the present invention;

Figure 2 is a front elevation view of the weighted bag of Figure 1;

Figure 3 is a rear elevation view of the weighted bag of Figure 1;

Figure 4 is a bottom elevation view of the weighted bag of Figure 1;

Figure 5 is a bottom elevation view of the weighted bag of Figure 1;

Figure 6 is a cross-section view of the weighted bag of Figure 1 taken along a central plane, with a filling mechanism in the form of a funnel extended from the weighted bag and a filling material filling the weighted bag;

Figure 7 is a cross-section view of the weighted bag of Figure 6, with the funnel in a partially-collapsed configuration;

Figure 8 is a cross-section view of the weighted bag of Figure 6, with the funnel in a fully collapsed con-

figuration;

Figure 9 is a front perspective view of another embodiment of a weighted bag which is not part of the present invention;

Figure 10 is a front perspective view of the weighted bag of Figure 9, with a releasable cover of the bag moved to expose an opening of the bag;

Figure 10A is a bottom front perspective view of the weighted bag of Figure 9;

Figure 11 is a front elevation view of the weighted bag of Figure 9;

Figure 12 is a rear perspective view of a weighted bag according to aspects of the present invention;

Figure 13 is a rear elevation view of the weighted bag of Figure 12;

Figure 14 is a front elevation view of the weighted bag of Figure 12;

Figure 15 is a right side elevation view of the weighted bag of Figure 12;

Figure 16 is a left side elevation view of the weighted bag of Figure 12;

Figure 17 is a magnified view of a portion of the weighted bag of Figure 13; and

Figure 18 is a magnified view of a portion of the weighted bag of Figure 14.

DETAILED DESCRIPTION OF THE DISCLOSURE

[0021] It will be understood that like or analogous elements and/or components, referred to herein, may be identified throughout the drawings by like reference characters. In addition, it will be understood that the drawings are merely schematic representations of the invention, and some of the components may have been distorted from actual scale for purposes of pictorial clarity.

[0022] Referring now to the drawings and in particular to Figures 1-8, a weighted bag with a handle for weightlifting is shown generally at reference number 10. The weighted bag 10 includes an outer shell 12 and handle assembly 14. The handle assembly 14 is coupled to the outer shell 12 by two or more points along the weighted bag 10, such as by a strap assembly 70 as described herein. The weighted bag 10 as shown in Figures 1-8 is configured for weightlifting and similar exercises, and can be lifted, carried, thrown, dropped, and otherwise used to enhance strength, agility and the like.

[0023] The outer shell 12, shown in Figures 1-8, comprises one or more panels 20 that are connected by one or more seams 22, an opening 24 with a shell closure member 26. Each of the panels 20 has an inner surface 31 defining an inner cavity 21 configured to hold a filler material 16 and an outer surface 32 opposite the inner surface 31. The shell 12 has a top 38 and a bottom 39, such that the opening 24 is positioned on the top 38, and the bag 10 is configured to rest on the bottom 39. It is understood that the top 38 and the bottom 39 are relative terms that depend on the orientation of the bag 10.

[0024] It is to be understood the inner surface 31 and outer surface 32 of the panels 20 may be defined by one or more surfacing layers that may be of substantially equal or variable materials. Generally, these are two or greater ply configuration coupled together. In the configuration shown, the panels are shown as singular pieces with the understanding that they may represent multiple plies of material. In one embodiment, the panels 20 are formed from a two ply construction, with the outer and inner plies comprising different grades of ballistic nylon fabric (the outside being of 1000 denier and the inside being of 500 denier). Of course, other configurations are contemplated.

[0025] With reference to the example embodiment of the outer shell 12 in Figures 1-8, the panels 20 include at least two opposed end panels 50 and central body panel 58. Each end panel 50 has an outer panel 51, an inner panel 52, and slot 57 defined between the inner and outer panels 51, 52. The outer panel 51 is coupled to the inner panel 52 by any number of different structures, but not limited to, cross- stitching, heat sealing, adhesive, among others. Each slot 57 in this embodiment, as shown in Figures 6-8, extends between the outer and inner panels 51, 52 and has upper and lower openings 53 to permit passage into and out of the slot 57, and the slot 57 extends continuously between the openings 53. In one embodiment, as shown in Figures 1-5, the outer and inner panels 51, 52 are connected together around the exteriors of the panels 51, 52, and in other embodiments, the panels 51, 52 may have inner walls, seams, adhesives, heat sealing, or other structures that define a slot 57 that is narrower than the widths of the panels 51, 52. In the embodiment of Figures 1-8, the end panels 50 are substantially parallel with each other, and the central body panel 58 extends between the end panels 50. The shell 12 in the embodiment of Figures 1-8 is entirely or substantially defined by the end panels 50 and the central body panel 58. In this embodiment, the shell 12 defines a cylindrical configuration, having a circular cylindrical portion or central body portion 54 formed by the central body panel 58 and circular flat or bulged ends 55 formed by the end panels 50. In other embodiments, the shell 12 may have a different shape, such as an oval cylinder, a cube, a rectangular cylinder, a triangular cylinder, etc. It is understood that the cylindrical portion 54 may simply be referred to as a "central body portion" when describing a shell 12 having a cylindrical shape or any other shape. Likewise, the relative sizes and shapes of the end panels 50 and the central body panel 58 may be different in other embodiments, and the cylindrical portion 54 and/or the ends 55 may be formed of a greater of smaller number of panels in other embodiments. In general, the cylindrical portion 54 and the ends 55 may each be formed by one or more panels 22.

[0026] In the embodiment of Figures 1-8, the bag 10 has an opening 24 and a filling mechanism 25 that is accessible through the opening 24 for filling the bag 10. The opening 24 in the embodiment of Figures 1-8 is placed along the central body panel 58 in such a manner

that it allows entry to the inner cavity 21 of the bag 10. The opening 24 shown in Figures 1 and 5 is oriented along the length of central body panel 58 at the top of the bag 10, but the opening 24 may be oriented and/or located differently in other embodiments. The opening 24 includes a closure member 26 (also called a shell closure member) configured for releasably closing the opening 24. When engaged, the shell closure member 26 resists the movement of filler material 16 into or out of the opening 24. In the configuration shown, the opening 24 and the shell closure member 26 are positioned directly below the natural position of the handle 60, which can reduce the stresses that are placed in the region surrounding the opening.

[0027] As shown in Figures 1 and 5-8, the opening 24 is defined by first side edge 140, second side edge 142, first end 144, and second end 146 which collectively define the perimeter of the opening. The first side edge 140 and second side edge 142 are opposite and substantially parallel to each other and separated by the width of the opening 24. Further, the first end 144 and second end 146 are opposite to each other and separated by the length of the opening 24. The first side edge 140 and second side edge 142 are connected at their respective ends by first end 144 and second end 146. The first and second ends 144, 146 may be formed as V-shaped or U-shaped structures in one embodiment or may be straight linear sides that are substantially parallel to each other and perpendicular to the side edges 140, 142 in another embodiment. Generally, the opening 24 has an elongated rectangular configuration in the embodiment of Figures 1-8, and the opening 24 may have a differently-shaped configuration in other embodiments.

[0028] The shell closure member 26 is substantially planar to the opening 24 and coupled in such a way to edges of opening 24 that closure of the shell closure member 26 substantially closes the opening 24. The shell closure member 26, in the configuration of Figures 1-8, includes a zipper. In this configuration, the dimensions of the opening 24 are similar to the size of the shell closure member 26. In other words, the lengths of the edges of the shell closure member 26 are substantially parallel and comparable to the first side edge 140 and second side edge 142 of the opening 24. In contemplated configurations, the shell closure member 26 is secured in a manner that ensures close coupling along the entire edges 140, 142 of the opening 24. In other embodiments, the shell closure member 26 may have other configurations, such as a hook and loop fastener, snaps, buttons, flaps, and other fastening and/or closing structures or combinations of such structures may be utilized. It is understood that the configuration of the shell closure member 26 may depend at least partially on the configuration of the opening 24. For example, a shell closure member 26 in the form of a zipper may not be usable or optimal with some opening 24 configurations, and another type of closure member 26 may be used.

[0029] In the embodiment of Figures 1-8, the filling mechanism 25 includes a funnel structure 27 having a flexible encircling wall 160 forming a funnel shape, a grasping handle or grasping member 168, a filling mechanism closure member 170, and securing member 176. With particular reference to Figures 6-8, the flexible encircling wall 160 has a proximal end 161, a distal end 162, a lower exit 164, and an upper inlet 166. The proximal end 161 and distal end 162 are on opposite ends of the funnel 27, and the proximal end 161 is a fixed end connected to the shell 12, while the distal end 162 is a free end that can be extended out of the shell 12 through the opening 24 or retracted into the shell 12.

[0030] The proximal end 161 is connected to the inner surface 130 of the outer shell 12, as shown in Figures 6-8, and the connection between the proximal end 161 and the shell 12 forms a lower perimeter of the funnel 27. In the configuration of Figures 6-8, the proximal end 161 of the funnel 27 is secured to the inner surface of the shell 12 around the entire opening 24, along a connection line spaced from the opening 24. This configuration resists leakage of the filler material 16 through the connection between the proximal end 161 and the shell 12 and also provides a pocket 17 inside the opening 24 where the funnel 27 can be placed after collapsing, e.g., by folding or rolling, as described herein. The distal end 162, when fully extended and expanded, forms an upper perimeter of the funnel, and it is understood that the upper perimeter may be larger than the lower perimeter in one embodiment. Further, the funnel 27 may have a neck or narrowest portion 163 that is located between the proximal and distal ends 161, 162 and has a perimeter and a maximum width that are smaller than the perimeters and maximum widths at the proximal and distal ends 161, 162. In the embodiment shown in Figures 6-8, the neck 163 is located closer to the proximal end 161 than the distal end 162 and is configured to be generally located within the opening 24 when the funnel 27 is fully extended and expanded. It is to be understood the actual circumference or width at some locations are subject to change in shape, size and/or width during operation, articulation and folding of the funnel 27, and that the relative circumferences and widths described herein are the maximum such dimensions when the funnel 27 is fully extended and expanded. The wall 160 in Figures 6-8, including the lower exit 164 and the upper inlet 166, may be substantially oval or rectangular in shape in one embodiment, but these components are subject to variable changes in length and width in contemplated configurations and desired sizes of the weighted bag 10. It is to be understood the openings (exit 164 and inlet 166) are substantially large enough to allow entry of physical materials, such as sand or polymer beads, with minimal interference or resistance from the filling mechanisms 25.

[0031] The funnel 27 may have one or more grasping handles 168 at or near the distal end 162 to assist in pulling the funnel 27 through the opening 24 and/or opening the funnel closure 170 as described herein. The funnel 27 in Figures 6-8 has two grasping handles 168 on

opposite sides of the inlet 166, with each grasping handle 168 in the form of a thin strap connected to the exterior of the wall 160 of the funnel 27. The grasping handles 168 are oriented to extend outwardly from the distal end 162 when the funnel 27 is in an open and extended position. Placement of the grasping handle 168 on the funnel is variable and subject to change in contemplated configurations of the funnel 27. The grasping handle 168 may be connected to the wall 160 by stitching, adhesive, or heat sealing, among other techniques, or a combination of such techniques.

[0032] The funnel 27 also has a funnel closure 170 configured to close the inlet 166 to resist egress of the particulate material 16. In the embodiment of Figures 6-8, the funnel closure 170 includes a first engaging portion 172 and second engaging portion 174 positioned on opposite sides 165, 167 of the wall 160 at the inlet 166 proximate the distal end 162 and configured to engage each other to releasably close the inlet 166. The first engaging portion 172 and second engaging portion 174 include elongated strips of complementary hook and loop materials that releasably connect to each other when engaged. The engaging portions 172, 174, when engaged, seal the sides 165, 167 to each other to close the upper inlet 166 and resist the entry or exit of material through the upper inlet 166. In the embodiment of Figures 6-8, the strips forming the first and second engaging portions 172, 174 extend equal distances along the entirety of both sides of the inlet 166 to completely close the inlet 166 when engaged. In other embodiments, other releasable connecting or fastening structures can be used as the funnel closure 170, such as snaps, buttons, zippers, and the like, as well as complementary structures when appropriate, or combinations of different structures.

[0033] The funnel 27 also includes a funnel securing structure 176 configured to secure and further resist ingress or egress of material through the funnel 27. The funnel securing structure 176 in Figures 6-8 includes a first securing member 177 and a second securing member 178 that are configured to engage each other to releasably close the inlet 166. The funnel securing structure 176 in Figures 6-8 is lower on the flexible encircling wall 160 than the funnel closure 170. The securing members 177, 178 in this embodiment are connected to the outer surface of the flexible encircling wall 160 on opposite sides 165, 167 of the wall 160 at different distances from the distal end 162. The first securing member 177 is connected to the first side 165 closer to the distal end 162, and the second securing member 178 is connected to the second side 167 farther from the distal end 162. In this configuration, the wall 160 is configured to be rolled or folded by rolling or folding the first side 165 over the second side 167 as shown in Figure 8 to achieve engagement of the securing members 177, 178 to releasably retain the funnel 27 in the rolled or folded position. The securing members 177, 178 include elongated strips of complementary hook and loop materials that releasably connect to each other when engaged. The size and positioning of the securing members 177, 178 may be different in other embodiments. Additionally, the securing structure 176 may have a different configuration in other embodiments, such as any configuration of the funnel closure 170 discussed herein.

[0034] The inner cavity 21 of the outer shell 12 has filler material 16 within it when the device is prepared for use. Filler material 16 is designed to be a heavy but loose and flowable material including, but not limited to, sand, polymer beads, or other such particulate materials. In the embodiment of Figures 1-8, the bag 10 has an inner bag 135 connected around the opening 24 to contain the filler material 16, with seams (not shown) that define the shape of the inner bag 135 and/or connect pieces forming the inner bag 135. The inner bag 135 has an open end 136 that is connected to the shell 12 around the opening 24 such that the inner bag 135 is in communication with the exit 164 of the funnel 27. In this configuration, filler 16 fed into the inner cavity 21 through the filling mechanism 25 enters the inner bag 135 and is held by the inner bag 135. The inner bag 135 and the shell 12 may be designed differently in materials, connections (e.g., seams 22), and structure. For example, the materials, connections, and structure of the shell 12 may be configured for strength, durability, abrasion resistance, and comfort in handling, while the materials, connections, and structure of the inner bag 135 may be configured primarily for strength and resisting leakage.

[0035] The bag 10 can be filled by opening the shell closure member 26 to open the opening 24 and extending the filling mechanism 25 through the opening 24. The funnel 27 in Figures 6-8 can be fully extended by pulling the funnel 27 through the opening, disconnecting the securing structure 176, and then fully extending the funnel 27. When fully extended, the funnel 27 can be opened by disconnecting the closure 170 to open the inlet 166, which may be done with the assistance of the grasping handles 168. It is noted that the grasping handles may also be used to hold the upper inlet 166 open during filling. Once open, the filler material 16 can be filled into the cavity 21 (and the inner bag 135 if present) by entering through the upper inlet 166, travelling through the funnel 27, and exiting into the bag 10 through the lower exit 164.

[0036] After the desired amount of filler material 16 has been fed into the inner cavity 21 of the weighted bag 10, the closure 170 of the filling mechanism 25 is manipulated to close the inlet 166. In the embodiment of Figures 6-8, the first and second engaging portions 172, 174 are engaged with each other to close the inlet 166 of the funnel 27. The filling mechanism 25 can also then be collapsed into the opening 24, using the securing structure 176 to further secure the collapsed filling mechanism 25. In the embodiment of Figures 6-8, the funnel 27 is collapsed by rolling or folding the top of the flexible encircling wall 160 at such amounts and to such a degree to cause the securing members 177, 178 to engage with each other and secure the funnel 27 in a collapsed position. The filling mechanism 25 can then be pushed through open-

ing 24 and into the cavity 21 of the shell 12, and the shell closure member 26 is then manipulated to close the opening 24. In this collapsed configuration, the funnel 27 is received within a pocket 17 defined below the opening 24 between the proximal end 161 of the funnel 27 and the inner surface 31 of the shell 12. The resultant configuration of the filling mechanism 25 is sealed against ingress and egress of material in multiple ways, including by the shell closure member 26, the filling mechanism closure 170, and the folding or rolling of the filling mechanism 25 (secured by the securing structure 176), which creates a tortuous path for the filling material 16 to escape.

[0037] The handle assembly 14 of the bag 10 in Figures 1-8 includes a handle 60 and a strap assembly 70 including one or more straps connecting the handle 60 to the shell 12 to permit the bag 10 to be lifted by grasping the handle 60. In one embodiment where the shell 12 has a cylindrical shape, such as shown in Figures 1-8, the strap assembly 70 includes at least one circumferential strap 71 that extends partially or completely around the circumference of the cylindrical portion 54 of the shell 12. The strap assembly 70 in Figures 1-8 includes first and second circumferential or peripheral straps 71 extending around at least a portion of the periphery of the shell 12, and a central or transverse strap 80 extending around at least a portion of the periphery of the shell 12 transverse to the circumferential straps 71. The circumferential straps 71 as shown in Figures 1-5 extend parallel to each other around the cylindrical portion 54 of the shell 12, with the two circumferential straps 71 each located proximate one of the ends 55, and the central strap 80 extends around the cylindrical portion 54 and the circular ends 55 of the shell 12 perpendicular or transverse to both circumferential straps 71. It is noted that the term "circumferential" is used herein with respect to a circular cylindrical structure as shown in Figures 1-8, but that the term "peripheral" may be used to describe these straps for use with a structure that is not necessarily circular. The terms "circumferential" and "peripheral" as used herein are not intended to imply that the relevant strap necessarily extends around the entire circumference or periphery of the bag 10, but only specify the direction in which the strap extends, i.e., around the circumference or periphery.

[0038] In the embodiment of Figures 1-5, the first and second circumferential straps 71 extend from opposite ends 66 of the handle 60 circumferentially around the periphery of the cylindrical portion 54, around the bottom 39 of the shell 12, and back toward the top 38 of the shell 12 to engage the handle 60. The first circumferential strap 71 in this embodiment includes a first strap portion 74 that engages the handle 60 at one end 66 and extends in a first circumferential direction around a portion of the cylindrical portion 54 of the shell 12 and a second strap portion 75 that engages the handle 60 at one end 66 and extends in a second, opposite circumferential direction around a portion of the cylindrical portion 54 of the shell 12. The strap portions 74, 75 of the first circumferential strap 71 are joined together at a joint 76 on the bottom 39 of the shell 12 to form a single strap 71. In other embodiments, the strap portions 74, 75 may be parts of a single, integral or continuous strap 71, or may not connect together, e.g., such as by connecting to the shell 12. The second circumferential strap 71 in Figures 1-5 is similarly configured, including a first strap portion 77 that engages the handle 60 at one end 66 and extends in a first circumferential direction around a portion of the cylindrical portion 54 of the shell 12 and a second strap portion 78 that engages the handle 60 at one end 66 and extends in a second, opposite circumferential direction around a portion of the cylindrical portion 54 of the shell 12. The strap portions 77, 78 of the second circumferential strap 71 are joined together at a joint 79 on the bottom 39 of the shell 12 to form a single strap 71. In other embodiments, the strap portions 77, 78 may be parts of a single, integral or continuous strap 71, or may not connect together, e.g., such as by connecting to the shell 12. The joints 76, 79 are formed by a combination of stitching and adhesives in one embodiment, but may be formed by additional connecting structures and techniques described herein, or combinations thereof.

[0039] In the embodiment of Figures 1-5, the first strap portions 74, 77 of the first and second circumferential straps 71 are formed as an integral or continuous strap 72 that extends from the joint 76 into and through the handle 60 and to the other joint 79, and the second strap portions 75, 78 of the first and second circumferential straps 71 are similarly formed as an integral or continuous strap 73. In this embodiment, the first and second circumferential straps are all formed as part of a continuous strap, connected by the joints 76, 79. It is understood that a "continuous" strap as used herein refers to a strap that functions or operates as a single piece (which may have joints or other junctures within), while an "integral" strap as used herein refers to a strap that is formed of a single, integral piece without joints, seams, etc. These straps 72, 73 each extend circumferentially around the same side of the cylindrical portion 54 proximate opposite ends 55 in this embodiment, but it is understood that in another embodiment the straps 72, 73 may cross each other within the handle 60 and extend on opposite sides. The strap portions 74, 75, 77, 78 in this embodiment engage the handle 60 at least by extending through the handle 60, and may be fixedly connected to the handle 60, or the handle 60 may be able to slide with respect to the strap portions 74, 75, 77, 78. In other embodiments, the strap portions 74, 75, 76, 77 may be separate pieces that are separately engaged with the handle 60, or each circumferential strap 71 may itself be formed as a single piece engaged with the handle 60. In a further embodiment, both of the circumferential straps 71 may be formed by a single-piece strap that extends twice through the handle 60 and around both ends of the cylindrical portion 54 of the shell 12. It is understood that the engagement between the strap portions 74, 75, 77, 78 and the handle 60 and the shell 12 is sufficient that the shell 12 can be

lifted by exerting an upward force on the handle 60.

[0040] In the embodiment of Figures 1-5, the circumferential straps 71 are connected to or engaged with the shell 12 in a slidable configuration by retaining structures 28 in the form of loop assemblies or belt loop assemblies, rather than being fixedly connected to the shell 12. It is understood that the retaining structures 28 may be referred to as loop assemblies 28 in discussing the embodiment of Figures 1-5 herein, but that other retaining structures may be used to achieve similar functionality. In another embodiment, one or both of the circumferential straps 71 may be provided in the same or a similar configuration while being fixedly connected to the shell 12, such as by stitching, adhesive, heat sealing, etc. The loop assemblies 28 in Figures 1-5 are positioned around the cylindrical portion 54 of the shell 12 at or proximate to the opposed ends 55, and may be referred to as a first end loop assembly 28 and a second end loop assembly 28. In the embodiment of Figures 1-5, the first end loop assembly 28 secures the first circumferential strap 71 to the shell 12, and the second end loop assembly 28 secures the second circumferential strap 71 to the shell 12. The loop assemblies 28 in this configuration extend in both circumferential directions around the cylindrical portion 54 of the shell 12, from the top 38 to the bottom 39 of the shell 12.

[0041] The shell 12 in Figures 1-5 also has circumferential supports 30 that are fixedly connected to the shell 12 (e.g., to the central body panel 58) circumferentially around the cylindrical portion 54 proximate the ends 55 and extend beneath the loop assemblies 28. The circumferential supports 30 in the embodiment of Figures 1-5 are connected to the shell 12 around the entire circumference of the shell 12 and across the entire width of each support 30, except for the locations where the circumferential supports 30 cross the opening 24 and the closure 26, where the circumferential supports 30 are connected only around the outer edge (the junctures with the end panels 50). The circumferential supports 30 may be made from woven nylon or other durable fabric material and may be connected to the shell 12 by stitching and adhesives in one embodiment, but may be differently configured in other embodiments.

[0042] The loop assemblies 28 in the embodiment of Figures 1-5 each include a plurality of cross supports 33 that define a channel 35 beneath the cross supports 33, such that the cross supports 33 extend across the channel 35. The cross supports 33 in Figures 1-5 are arranged in an alternating or oscillating pattern, where each cross support 33 is oriented at an oblique angle to the circumferential direction, the longitudinal direction (i.e., between the ends 55), the channels 35, the circumferential straps 71, and the seams 22 around the end panels 50 (e.g., a "zig-zag" pattern). In this configuration, adjacent cross supports 33 have triangular gaps 37 between them to expose portions of the circumferential straps 71 beneath. In one configuration, the end of each cross support 33 overlaps with the end(s) of the adjacent cross support(s) 33 as shown in Figures 1-5, and these overlapping portions of the cross supports 33 are stitched together at the points of connection between the cross supports 33 and the shell 12. These points of connection may be formed by continuous circumferential seams 29 that are spaced from each other, parallel to each other, and located on opposite sides of the respective channel 35, as shown in Figures 1-5. In one embodiment, the cross supports 33 form angles of 55-60° or 50-65° with the edges of the circumferential supports and/or the circumferential direction, and adjacent cross supports 33 are oriented at angles of 60-70° with each other, although other angular orientations may be used in other embodiments.

[0043] Each channel 35 in the embodiment of Figures 1-5 is defined by a single strip of material that is folded over itself to form an overlapping, alternating pattern and stitched at and around the folds to the shell 12 to form the cross supports 33. In another embodiment, the cross supports 33 defining each channel 35 may be separate pieces that are connected together. The cross supports 33 in the embodiment of Figures 1-5 are connected directly to the circumferential supports 30, but this configuration may vary. In this configuration, the circumferential straps 71 are slidably restrained between the loop assemblies 28 and the circumferential supports 30, and the circumferential supports 30 provide strength, durability, and abrasion resistance at these areas. The channels 35 are defined between the undersides of the cross supports 33 and the confronting surface of the shell 12, which may include the circumferential supports 30 as in the embodiment of Figures 1-5, or the outer surface 32 of the shell 12 or other structures in other configurations. Additionally, in one embodiment, the cross supports 33 are connected to the circumferential supports 30, and both such structures are connected to the shell 12, by two parallel, spaced circumferential seams 29. In the embodiment of Figures 1-8, one of such circumferential seams 29 also forms the connection between the outer and inner end panels 51, 52 and the center body panel 58. In another embodiment, where a circumferential support 30 or other support layer is not present, the cross supports 33 may be directly connected to the shell 12 along such circumferential seams 29.

[0044] The channels 35 of each of the loop assemblies 28 in Figures 1-5 include an entrance region 34 at or near the top 38 of the bag 10, and an exit region 36 at or near the bottom 39 of the bag 10. In this configuration, the circumferential straps 71 extend through the channels 35, such that each of the strap portions 74, 75, 77, 78 extends into the entrance region 34 of one of the channels 35, through the respective channel 35, and out the exit region 36 of the channel 35. The joints 76, 79 of the circumferential straps 71 are located in the spaces between the exit regions 36 of the two channels 35 of the respective loop assembly 28. In another embodiment, the retaining structures 28 may not be in the form of loop assemblies with cross supports 33, and may instead use solid or porous panels to create the channels 35, similar

to the slots 57, or may use a different structure for retaining the circumferential straps 71. It is understood that the retaining structures or loop assemblies 28 and associated structures such as the circumferential supports 30 are not illustrated in Figures 6-8 for simplification purposes.

[0045] The strapping assembly 70 also includes a central strap or transverse strap 80 that extends in a peripheral direction from the handle 60 around both ends 55 of the shell 12. The central strap 80 includes first and second central strap portions 81, 82 that are engaged with the handle 60 and extend from the ends 66 of the handle 60 around opposite ends 55 of the shell 12, and the strap portions 81, 82 of the central strap 80 are joined together at a joint 83 on the bottom 39 of the shell 12 to form a single strap 80. In the embodiment of Figures 1-8, the central strap 80 is formed as a single piece, extending through the handle 60 to form the strap portions 81, 82 on opposite sides of the handle 60 and having two ends that meet at the joint 83. In another embodiment, the central strap portions 81, 82 may be separate pieces that are separately engaged with the handle 60. The joint 83 is formed by a combination of stitching and adhesives in one embodiment, but may be formed by additional connecting structures and techniques described herein, or combinations thereof. In another embodiment, the central strap portions 81, 82 may not connect to each other, and may instead be connected to the shell 12 on the ends 55 or on the bottom 39. It is understood that the engagement between the strap portions 81, 82 and the handle 60 and the shell 12 is sufficient that the shell 12 can be lifted by exerting an upward force on the handle 60.

[0046] The portions 81, 82 of the central strap 80 in Figures 1-8 extend around the ends 55 of the shell 12 by extending through the slots 57 in the ends 55. As shown in Figures 6-8, the central strap portions 81, 82 extend between the outer and inner panels 51, 52 and through the upper and lower openings 53 to pass into and out of the slot 57. The central strap portions 81, 82 further extend beneath the circumferential straps 71 and across the bottom 39 of the shell 12 in this embodiment. The central strap 80 is slidably received within the slots 57 and is not fixedly connected to the shell 12 in the embodiment of Figures 1-8, but one or both of the central strap portions 81, 82 may be fixedly connected to the shell 12, e.g., within the slot 57 or on the bottom 39 of the shell 12. In another embodiment, the strap portions 81, 82 may extend around the ends 55 of the shell 12 by extending on the outsides of the outer panels 51. The inner panels 52 and/or the slots 57 may be absent, or the slots 57 may be created by an external structure, in such a configuration.

[0047] The strap assembly 70 in the embodiment of Figures 1-8 assists with distribution of forces around the shell 12, allowing the bag 10 to be handled roughly and even thrown into the air (e.g., 4,6 m (15 feet) or more) and landing on the ground, while containing heavy filler material 16 (e.g., 22,7-45,3 kg (50-100 pounds)). The positions and orientations of the straps 71, 80 distribute the forces of lifting and throwing by the handle 60 evenly around the shell 12 and avoid concentration of stresses that can result at seams, bonds, or other fixed connections. Additionally, the ability of the straps 71, 80 to slide and move with respect to the shell 12 allows more even exertion of forces on the straps 71, 80 and allows each strap 71, 80 to compensate for forces exerted unevenly on other straps 71, 80. The configuration of the strap assembly 70 further improves durability of the straps 71, 80 themselves and of the bag 10 as a whole, among other benefits.

[0048] The handle 60 in the embodiment of Figures 1-8 is formed as an elongated tubular body 62 having a circular cross section and a central bore or passage 64 extending between opposing ends 66 along the direction of elongation. The body 62 is also slightly curved or arcuate in this configuration, rising in the middle with respect to the ends 66. In this embodiment, the handle 60 is oriented to extend longitudinally with respect to the shell 12, i.e., between the ends 55 and parallel to the central axis of the cylindrical portion 54. The outer surface of the body 62 of the handle 60 forms a grasping surface configured to be grasped by the user, and a coating, sleeve, or other structure applied to the body 62 to enhance gripping. The handle 60 may also have a coating, sleeve, or other structure applied to the inside of the central passage 64 to either increase or decrease grip or friction with respect to the straps 72, 73, 80 that extend through the central passage 64. In one embodiment, the handle 60 and/or the body 62 thereof may be made from a flexible and resilient material, such as a PVC hose material or the like. In the embodiment of Figures 1-8, the handle 60 is positioned above the outer shell 12 and the opening 24. In other embodiments, the handle 60 may have a different structure or material construction, including different shapes including, but are not limited to, ovals, squares, rectangles, or other shapes. In another embodiment, the handle 60 may not have a central passage 64, such as in an embodiment where the straps 72, 73, 80 are not continuous or where the handle 60 has other structures for engaging continuous straps 72, 73, 80. In a further embodiment, the handle 60 may have structures for fixedly connecting to the straps 71, 80.

[0049] One embodiment of a method for assembly of a weighted bag 10 as shown in Figures 1-8 may be performed using stitching, adhesives, heat sealing or pressing, or various other connection techniques to form seams and other connections between the various components. The loop assemblies 28 in this embodiment are constructed by folding four strips of material to form the cross supports 33 and fixedly connecting the cross supports 33 (e.g., by stitching, adhesives, heat sealing, etc.) along the edges of the circumferential supports 30 to create the alternating configuration of the cross supports 33. The cross supports 33 are not connected along the middle of the circumferential supports 30 to define the channels 35 between the cross supports 33 and the circumferential supports 30. The circumferential straps 71 and

the central strap 80 are connected to the handle 60, which is accomplished in the embodiment of Figures 1-8 by pulling and/or pushing the single-piece straps 72, 73, 80 through the central passage 64 of the handle 60, such that the straps 72, 73, 80 extend from both ends 66 of the handle. The straps 72, 73, 80 may be connected together at one or more points within the handle 60 in one embodiment.

[0050] The funnel 27 is assembled by creating the encircling wall 160, e.g., from a single piece of fabric wrapped and connected to itself to form a funnel structure. The engaging portions 172, 174 and the securing members 177, 178 are connected to the wall 160 in appropriate locations, in the form of complementary strips of hook and loop material, in the embodiment of Figures 1-8. The grasping handles 168 may also be connected to the wall 160 at or proximate the inlet 166, and in one embodiment, the grasping handles 168 are connected prior to the engaging portions 172, 174 such that the engaging portions 172, 174 overlay the grasping portions 168.

[0051] The central body panel 58 is prepared by cutting the opening 24 through the central body panel 58 and the shell closure member 26 is connected to the opening 24. The shell closure member 26 may be provided with a shroud or other cover to protect the shell closure member 26 and increase comfort if the shell closure member 26 is contacted by the user during use, including a moveable cover or a static cover, e.g., to cover rigid surfaces such as zipper teeth. The circumferential supports 30 and the loop assemblies 28 are then positioned over and connected to the outer surface 32 of the central body panel 58 along opposite edges of the central body panel 58. The inner bag 135 is connected to the central body panel 58 by connecting the open end 136 around the opening 24 on the inner surface 31. The inner bag 135 may be formed before connecting to the central body panel 58, such as by connecting several panels of material together or using seams to form a single piece of material in the correct shape for the inner bag 135. The funnel 27 is also connected to the central body panel 58. by connecting the proximal end 161 of the wall 160 around the opening 24 on the inner surface 31. In one embodiment, the funnel 27 and the inner bag 135 may be connected together to the central body panel 58.

[0052] The shell 12 is then completed by connecting the end panels 50 to the central body panel 58 around the seams 22 shaped to form the cylindrical portion 54 with circular ends 55. In one embodiment, the inner panels 52 and the outer panels 51 are connected to the central body panel 58 with the same seam 22 or connection, and in another embodiment, the inner panels 52 are connected before the outer panels 51. The inner panels 52 are connected around their entire perimeters in this configuration, and the outer panels 51 are connected around the majority of the perimeters, but are not connected in strategic areas to form the slots 57. It is understand that a cover or lining may be applied around the openings 53 of each slot 57 for durability and abrasion resistance. The handle assembly 14 is then coupled to the shell 12 by extending the circumferential strap portions 74, 75, 77, 78 through the channels 35 and joining them at the joints 76, 79 to form the circumferential straps 71, and extending the central strap portions 81, 82 through the slots 57, and then joining them at the joint 83 to form the central strap 80. The bag 10 of Figures 1-8 is substantially complete after these steps have been accomplished.

[0053] Figures 9-11 illustrate another embodiment of a weighted bag 210 that includes many components and features in common with the bag 10 illustrated in Figures 1-8 and described herein. Such common features and components are referenced in Figures 9-11 with the same reference numbers used herein with respect to Figures 1-8, and such common features and components may not be re-described herein in detail with respect to the embodiment of Figures 9-11. While not illustrated in the drawings, the bag 210 of Figures 9-11 includes a filling mechanism 25 that is the same or similar to the filling mechanism 25 described herein and shown in Figures 6-8, in one embodiment. The filling mechanism 25 in this embodiment includes a funnel 27 having all the structural elements described herein with respect to the funnel 27 of Figures 6-8 and functioning in the same manner, but may include additional or alternate features as described herein in other embodiments. For example, the bag 210 in Figures 9-11 has a funnel 27 having a flexible encircling wall 160 with a proximal end 161 connected to the inner surface 31 of the shell 12 around the opening 24 and a distal end 162 that can be pulled through the opening 24 to extend the funnel 27 for filling. The wall 160 of the funnel 27 in this embodiment defines an inlet 166 proximate the distal end 162 and an exit 164 into the shell 12, and the funnel 27 also has a funnel closure 170 includes a first engaging portion 172 and second engaging portion 174 positioned on opposite sides 165, 167 of the wall 160 at the inlet 166 and securing members 176 as shown in Figures 6-8 and described herein. The bag 210 in Figures 9-11 also has an inner bag 135, as shown in Figures 6-8 and described herein, which is also not illustrated in Figures 9-11. It is understood that the inner bag 135 in the embodiment of Figures 9-11 is shaped to be consistent with the shape of the shell 12 of the bag 210.

[0054] The shell 12 of the bag 210 in Figures 9-11 has a frusto-conical or tapered shape, and may be formed by multiple panels 20 connected by seams 22 as described herein. In this embodiment, the shell 12 defines a tapered configuration, having a central body portion 212 formed by a central body panel 214 and circular flat or bulged ends 216, 217 formed by end panels 218, 219. The central body portion 212 in Figures 9-11 is formed as a tapered portion and has a frusto-conical shape that has a smaller width, perimeter (e.g., circumference), and cross-sectional area (relative to the central axis of the shell 12) at the bottom 38 and a larger width, perimeter, and cross-sectional area at the top 39, and the central

body panel 214 is formed to create this shape. The central body portion 212 has a continuous linear taper between the ends 216, 217 when viewed from the side or in cross-section in the embodiment of Figures 9-11. The contour and taper of the central body portion 212 may be different in other embodiments, for example, a concavely curved taper creating a funnel shape, or a convexly curved taper, or a non-continuous linear taper. Additionally, in another embodiment, the central body portion 212 may not be tapered the entire distance between the ends 216, 217, i.e., the tapered portion may be a smaller portion of the central body portion 212. In such a configuration, the central body portion 212 may have a non-tapered portion or a reverse-tapered portion adjacent the tapered portion.

[0055] The ends 216, 217 of the shell 12 in the embodiment of Figures 9-11 are circular in shape, and the end panels 218, 219 forming the ends 216 are circular panels that may be bulged or flat. The top end 216 and the top end panel 218 have larger widths, perimeters (e.g., circumferences) and surface areas than the bottom end 217 and the bottom end panel 219, which complements the taper of the central body portion 212. In one embodiment, the top end 216 may have a width of 30,5-50,8cm, or 35,6-45,7cm (12-20 in., or 14-18 in), the bottom end 217 may have a width of 15,2-35,6 cm, or 20,3-30,5 cm (6-14 in., or 8-12 in) and the height of the central body portion 212 may be 48.3-63,5 cm, or 50,8-62,2 cm (19-25 in., or 20-24.5 in.). In another embodiment, the bag 210 may be larger or smaller, but the ends 216, 217 may have similar proportions, i.e., the ratio of the width of the top end 216 to the width of the bottom end 217 is 1.25:1 - 2:1 or 1.5:1 - 1.75:1. In such embodiments, the ratio of the area of the top end 216 to the area of the bottom end 217 is 1.5:1 - 4:1 or 2.25:1 - 3:1 In a shell 12 where the central body portion 212 has a continuous linear taper, the taper angle T of the central body portion 212 in such a configuration is 6-10°, or 7-9°, with respect to the vertical direction and/or central axis of the shell 12. It is understood that the central axis is an axis that passes through the center of volume of the shell 12 when fully expanded and passes through the geometric center of the top and bottom ends 216, 217, which may be an axis of symmetry in a symmetrical structure. The bag 210 in Figures 9-11 is configured for lifting by the user holding the bag 210 against his/her chest and wrapping his/her arms around the central body portion 212, and the tapering of the central body portion 212 produces a shape that is advantageous for such usage, by aiding the user in holding the bag 210 without downward slippage due to the weight of the bag 210.

[0056] The bag 210 has an opening 24 on the top 38 of the shell 12, which is formed by an opening along the centerline of the top end panel 218 in the embodiment of Figures 9-11. The opening 24 is provided with a closure mechanism 26 in the form of a zipper in this embodiment. It is understood that the opening 24 and the closure mechanism 26 may have any structure discussed herein with respect to the opening 24 and the closure mechanism 26 of Figures 1-8. The opening 24 and the closure mechanism 26 in this embodiment function in the same way as in the bag 10 of Figures 1-8, whereby the closure mechanism 26 opens to allow the funnel 27 to be extended for filling the bag 210, and the closure mechanism 26 can be closed after collapsing the funnel 27 to seal the opening 24. The closure mechanism 26 in Figures 9-11 has a moveable cover 220 that can be moved to cover the opening 24 as shown in Figure 9, or to uncover the opening 24 as shown in Figure 10. The cover 220 in Figures 9-11 is in the form of a flap that is anchored at a proximal end 221 and has a free distal end 222 that can be folded to cover or uncover the opening 24 as desired. Additionally, the bag 210 in this embodiment has a releasable connecting structure 223 configured for retaining the cover 220 to the top 38 of the shell 12 to cover the opening 24, including complementary engaging members 224, 225 in the form of strips of hook and loop material. The releasable connecting structure 223 illustrated in Figure 10 includes engaging members 224 in the form of two strips of hook and loop material connected to the top end panel 218 along opposite sides of the opening 24 and another one or more engaging members 225 in the form of a complementary strip of hook and loop material connected to the underside of the cover 220.

[0057] The bag 210 may be made using the same materials and techniques described herein with respect to the embodiment of Figures 1-8. In particular, the shell 12, the inner bag 135, and the filling mechanism 25 can be assembled in a similar manner as the same components in Figures 1-8. Assembly of the bag 210 in Figures 9-11 further includes connecting the engaging members 224 to the top end panel 218 around the opening 24 and connecting the engaging member 225 to the underside of the cover 220, and then connecting the cover 220 to the shell 12, using any of the connection structures and techniques described herein, including stitching, adhesives, and heat sealing, among others.

[0058] Figures 12-18 illustrate an embodiment of a weighted bag 310 of the invention that includes many components and features in common with the bag 10 illustrated in Figures 1-8 and the bag 210 illustrated in Figures 9-11 and described herein. Such common features and components are referenced in Figures 12-18 with the same reference numbers used herein with respect to Figures 1-11, and such common features and components may not be re-described herein in detail with respect to the embodiment of Figures 12-18. While not illustrated in the drawings, the bag 310 of Figures 12-18 includes a filling mechanism 25 that is the same or similar to the filling mechanism 25 described herein and shown in Figures 6-8, in one embodiment. The filling mechanism 25 in this embodiment includes a funnel 27 having all the structural elements described herein with respect to the funnel 27 of Figures 6-8 and functioning in the same manner, but may include additional or alternate features as described herein in other embodiments. For example, the bag 310 in Figures 12-18 has a funnel 27 having a

flexible encircling wall 160 with a proximal end 161 connected to the inner surface 31 of the shell 12 around the opening 24 and a distal end 162 that can be pulled through the opening 24 to extend the funnel 27 for filling. The wall 160 of the funnel 27 in this embodiment defines an inlet 166 proximate the distal end 162 and an exit 164 into the shell 12, and the funnel 27 also has a funnel closure 170 includes a first engaging portion 172 and second engaging portion 174 positioned on opposite sides 165, 167 of the wall 160 at the inlet 166 and securing members 176 as shown in Figures 6-8 and described herein. The bag 310 in Figures 12-18 also has an inner bag 135, as shown in Figures 6-8 and described herein, which is also not illustrated in Figures 12-18. It is understood that the inner bag 135 in the embodiment of Figures 12-18 is shaped to be consistent with the shape of the shell 12 of the bag 210.

[0059] The shell 12 of the bag 310 in Figures 12-18 has a rectangular shape from the front and the rear and an oval shape (when filled) from the sides. In this embodiment, the shell 12 defines a rectangular configuration that is elongated between two opposed ends 315. The shell 12 has a central body portion 312 formed by a single panel 314 that is wrapped around a top 316 and a bottom 318 of the central body portion 312 and is connected to itself along end seams 313 at opposed ends 315 and along a lateral seam 317 extending between the ends 315 on the rear side 319 of the shell 12. The rear seam 317 extends across the rear side parallel to the lateral centerline L of the shell 12 (see Figure 13) and below the lateral centerline L, i.e., between the lateral centerline L and the bottom 318. The shell 12 of the bag 310 in Figures 12-18 is elongated between the ends 315 to form the rectangular shape having four corners 324. When the bag 310 is filled with the filling material 16, the corners 324 retain semi-pointed shapes, while the top 316 and bottom 318 become rounded to create the oval shape of the filled shell 12. In this configuration, the top 316 and bottom 318 may develop a slight outward curvature toward the corners 324 and a more flattened shape near the lateral centerline of the bag 310. The shell 12 may have a different shape in other embodiments, and/or the shell 12 may be made from multiple panels in other embodiments.

[0060] The bag 310 has an opening 24 on the front 320 of the shell 12, which is formed by an opening through the panel 314 along the centerline of the front 320 in the embodiment of Figures 12-18. The opening 24 is provided with a closure mechanism 26 in the form of a zipper in this embodiment. It is understood that the opening 24 and the closure mechanism 26 may have any structure discussed herein with respect to the opening 24 and the closure mechanism 26 of Figures 1-8. The opening 24 and the closure mechanism 26 in this embodiment function in the same way as in the bag 10 of Figures 1-8, whereby the closure mechanism 26 opens to allow the funnel 27 to be extended for filling the bag 310, and the closure mechanism 26 can be closed after collapsing the funnel 27 to seal the opening 24. The closure mechanism 26 in Figures 12-18 has a fixed cover 325 that covers one end of the opening 24 as shown in Figure 14. The cover 325 is positioned so that the handle 326 of the zipper of the closure mechanism 26 can be positioned beneath the cover 325 when the closure mechanism 26 is in the closed position, in order to avoid the zipper handle 326 from pressing into the user's skin during use, enhancing comfort. The cover 325 in Figure 14 is in the form of an arch that is anchored at the ends and arches over the end of the opening 24.

[0061] The bag 310 has two handles 321 connected to the shell 12 near the junctures between the top 316 and the ends 315, i.e., the corners 324 along the top 316 of the shell 12 in the rectangular shell 12 shown in Figures 12-18. The handles 321 in this embodiment each include a base 322 fixedly connected to the shell 12 and a gripping member 323 extending outward from the base 322. The gripping members 323 are each formed as a loop for the user's hand to extend through in the embodiment of Figures 12-18. In this embodiment, each of the gripping members 323 has ends that are connected to the front and rear sides 320, 319 of the shell 12 with the gripping member 323 forming a loop configuration between these connections. The gripping members 323 are connected only to the front and rear side 320, 319 of the shell 12 and still have a loop configuration. The gripping members 323 extend outward at oblique angles A with the lateral centerline L of the shell 12 (see Figure 13) and oblique angles B with the nearest peripheral edges of the shell 12. In one embodiment, the angles A are approximately 45° (40-50°) to the lateral centerline L, and the angles B are approximately 135° (125-145°) with the nearest peripheral edge, i.e., the top 316 or the nearest end 315 of the shell 12 in this embodiment. The angles B are measured with respect to the edges 334 of the gripping members 323 that are nearest the respective peripheral edge of the shell 12. In other embodiments, the gripping members 323 may extend outward at angles A that are 30-60° to the lateral centerline L of the shell 12), and the edges 334 of the gripping members 323 form angles B of approximately 120-150° with the nearest peripheral edge, i.e., the top 316 or the nearest end 315 of the shell 12 in such embodiments. It is understood that the angles A and B described herein are measured with respect to the gripping members 323 when extended to their furthest degree of extension in their most natural direction of extension, as shown in Figure 13. It is also understood that the angle A measured with respect to the lateral centerline L can be measured with respect to either edge 334 or the geometric centerline GC of the gripping member 323 in an embodiment as in Figure 13 where the edges 334 and the geometric centerline GC are all parallel to each other, although in some less symmetrical configurations, the geometric centerline GC may be a more appropriate. In other words, the angle A can be measured with respect to at least one of the edges and/or the geometric centerline. It is further understood that the angles

A and B are measured when the bag 310 is empty and pressed flat to the ground.

[0062] The bases 322 of the handles 321 are connected to the shell 12 proximate the top corners 324, and the bases 322 in Figures 12-18 extend on both the front side 320 and the rear side 319 of the shell 12 to permit the gripping members 323 to connect to both sides 319, 320. In the embodiment of Figures 12-18, each base 322 is formed of a single strip of material that extends from the nearest end 315 at an angle across the front 320 of the shell 12, over the top 316 of the shell 12, and then at an angle across the rear 319 of the shell 12 back to the end 315. In this configuration, the base 322 is not connected to the corner 324, leaving the corner 324 exposed. The base 322 in this configuration has a crossing portion 327 that extends over the top 316 of the shell 12, and the inner edge 328 of the crossing portion 327 (i.e., farthest edge inward from the nearest end 315) in Figures 12-18 extends approximately perpendicular (90°) to the top 316 of the shell 12 when the bag 310 is empty and pressed to the ground. In other words, the angle C between the inner edge 328 of the crossing portion 327 and the top 316 of the shell 12 is 80-100° or 85-95°. The inner edge 328 of the crossing portion 327 may additionally or alternately form the same or similar angles with respect to the lateral centerline L of the shell 12 and/or a line (not shown) extending directly between the top corners 324 on the shell 12. This configuration is shown in greater detail in Figures 17-18. The inner edge 328 of the crossing portion 327 is a straight edge in the embodiment of Figures 12-18, i.e., the inner edge 328 would be straight and linear if the base 322 were laid flat. Additionally, the base 322 in Figures 12-18 has angling portions 329 that angle across the front and rear sides 320, 319 of the shell and juncture with the crossing portion 327, and the inner edge 330 of each angling portion 329 forms a juncture angle D with the crossing portion 327 that is 110-140° or 120-130°. The angle E at the juncture between the inner edge 330 of each angling portion 329 and the nearest end 315 of the shell 12 is 40-70° or 50-60°. It is understood that the angles C, D, and E are measured when the bag 310 is empty and pressed flat to the ground. The crossing portion 327 in the embodiment of Figures 12-18 has a narrower width measured between the inner edge 328 and the opposite (outer) edge that is smaller than the widths of the angling portions 329.

[0063] The narrower width and the angles C and D in the embodiment of Figures 12-18 are created by folding the base 322 over itself toward the nearest end 315 of the shell 12 and connecting the folded portion 333 to the base 322, as shown in Figure 17. Each base 322 may be formed of an integral or continuous panel or strap having first and second opposed surfaces 331, 332, in one embodiment. In this configuration, the first surface 331 forms the outer surface of the angling portion 329 on the front side 320 of the shell 12 and the inner surface of the angling portion 329 (contacting the shell 12) on the rear side 319 of the shell 12, and the second surface 332 forms the outer surface of the angling portion 329 on the rear side 319 of the shell 12 and the inner surface of the angling portion 329 (contacting the shell 12) on the front side 320 of the shell 12.

[0064] The angles A-E described herein provide a more ergonomic and athletically efficient form for the bag, which is designed to be picked up by a user and thrown over his/her back for carrying so that the top 316 rests on the user's neck and shoulders. The angles A-B of the gripping members 323 provide effective and comfortable angles for lifting and carrying, and the angles C-E of the base 322 provide durability and advantageous distribution of forces and stresses on the shell 12 during lifting and carrying. As one particular example, the angle C between the inner edge 328 of the crossing portion 327 and the top 316 of the shell 12 avoids excessive concentration of stresses at the juncture between the base 322 and the top 316 of the shell 12, which can result in separation of the base 322 from the shell 12 and/or ripping of the shell 12 at that location. It is also noted that the position of the rear seam 317 below the lateral centerline L of the shell 12 avoids stress concentrations at the seam 317 by distancing the seam 317 from the handles 321 and also reduces the chance that the user will carry the bag 310 with the seam 317 in contact with his/her neck or shoulders, which could reduce comfort.

[0065] The bag 310 may be made using the same materials and techniques described herein with respect to the embodiment of Figures 1-8. In particular, the shell 12, the inner bag 135, and the filling mechanism 25 can be assembled in a similar manner as the same components in Figures 1-8. Assembly of the bag 310 in Figures 12-18 further includes connecting the gripping members 323 to the bases 322 of the handles 321, and then connecting the handles 321 to the top side 316 of the shell 12, using any of the connection structures and techniques described herein, including stitching, adhesives, and heat sealing, among others.

[0066] The terms "top," "bottom," "front," "back," "side," "rear," "proximal," "distal," and the like, as used herein, are intended for illustrative and relative purposes only and do not limit the embodiments in any way. Nothing in this specification should be construed as requiring a specific three dimensional orientation of structures in order to fall within the scope of this invention, unless explicitly specified by the claims. Additionally, the term "plurality," as used herein, indicates any number greater than one, either disjunctively or conjunctively, as necessary, up to an infinite number. For quantitative values described herein that do not include decimal points, each digit to the left of the decimal point is considered to be a significant digit. The scope of protection of the present invention is only limited by the accompanying claims.

Claims

1. A bag (310) for weightlifting and similar exercises

configured to be filled with a filler material (16), comprising:

a shell (12) comprising a central body portion (312) that is elongated between opposed first and second ends (315) and has a top (316) and a bottom (318) extending between the first and second ends (315), the shell (12) further having opposed front and rear sides (320, 319), the shell (12) having a lateral centerline extending between the first and second ends (315), wherein the central body portion (312) and the first and second ends (315) of the shell (12) combine to define and enclose an inner cavity configured for containing the filler material (16), and wherein the shell (12) has an opening (24) providing access to the inner cavity and a closure mechanism (26) configured for selectively opening (24) and closing the opening (24); and
a handle assembly comprising:

a first gripping member (323) connected to the shell (12) proximate a first juncture between the top (316) and the first end (315) wherein the first gripping member (323) extends outward from the shell (12) at oblique angles to the top (316), the first end (315), and the lateral centerline, and
a first base (322) connected to the shell (12) and extending on the front side (320) and the rear side (319) of the shell (12) and having:

a first crossing portion (327) extending over the top (316) between the front side (320) and the rear side (319) proximate a first juncture between the top (316) and the first end (315),
a first front angling portion (329) extending on the front side of the shell (12) from the first end (315) to the top of the shell (12) at oblique angles to the first end (315) and the top of the shell (12), and
a first rear angling portion (329) extending on the rear side of the shell (12) from the first end (315) to the top of the shell (12) at oblique angles to the first end (315) and the top of the shell (12),
wherein the first crossing portion (327) extends between the first front angling portion (329) and the first rear angling portion (329),

wherein the first gripping member (323) comprises ends connected at the first base (322) to the front and rear sides (320, 319) of the shell (12), forming a first loop configuration between these connections and wherein the first gripping member (323) extends outward from the first base (322),

wherein the handle assembly further comprises:

a second gripping member (323) connected to the shell (12) proximate a second juncture between the top (316) and the second end (315),
wherein the second gripping member (323) extends outward from the shell (12) at oblique angles to the top (316), the second end (315), and the lateral centerline (L),
a second base (322) connected to the shell (12) and extending on the front side (320) and the rear side (319) and having:

a second crossing portion (327) extending over the top (316) between the front side (320) and the rear side (319) proximate a second juncture between the top (316) and the second end (315), and
a second front angling portion (329) extending on the front side of the shell (12) from the second end (315) to the top of the shell (12) at oblique angles to the second end (315) and the top of the shell (12), and
a second rear angling portion (329) extending on the rear side of the shell (12) from the second end to the top of the shell (12) at oblique angles to the second end (315) and the top of the shell (12),
wherein the second crossing portion (327) extends between the second front angling portion (329) and the second rear angling portion (329),

wherein the second gripping member (323) comprises ends connected at the second base (322) to the front and rear sides of the shell (12), forming a second loop configuration between these connections, and wherein the second gripping member (323) extends outward from the second base (322).

2. The bag (310) of claim 1, wherein the shell (12) is formed of a single panel (314) extending around the front and rear sides (320, 319) of the shell (12) and connected to itself by seams at the first and second ends (315) and a lateral seam (317) extending between the first and second ends (315).

3. The bag (310) of claim 2, wherein the lateral seam (317) extends across the rear side (319) of the shell

(12), and the opening (24) is defined on the front side of the shell (12).

4. The bag (310) of claim 1, further comprising an inner bag (135) positioned in the inner cavity and connected to an inner surface of the shell (12), wherein the inner bag (135) is in communication with the opening (24) and is configured to be filled with the filler material (16) through the opening (24).

5. The bag (310) of claim 1, wherein the first crossing portion (327) has a first inner edge (328) extending over the top of the shell (12) and the second crossing portion (327) has a second inner edge (328) extending over the top of the shell (12), and wherein the first and second inner edges (328) each form angles (C) of 80-100° with the top of the shell (12) when the bag (310) is empty and pressed flat.

6. The bag (310) of claim 1, wherein the shell (12) has a rectangular shape defined by the top (316), the bottom (318), and the first and second ends (315), and the first juncture and the second juncture are corners of the rectangular shape along the top of the shell (12).

7. The bag (310) of claim 1, wherein the shell (12) has a length measured between the first and second ends (315) and a height measured between the top (316) and the bottom (318), and wherein the length is at least two times the height.

8. The bag (310) of claim 1, wherein the shell (12) is configured to have an oval shape when viewed from the first or second end (315).

9. The bag (310) of claim 1, wherein the first front angling portion (329) of the first base extends on the front side of the shell (12) from the first end (315) to the top of the shell (12), and the first rear angling portion (329) of the first base (322) extends on the rear side of the shell (12) from the first end (315) to the top of the shell (12).

10. The bag (310) of claim 9, wherein the second front angling portion (329) of the second base extends on the front side of the shell (12) from the second end (315) to the top of the shell (12), and the second rear angling portion of the second base (322) extends on the rear side of the shell (12) from the second end (315) to the top of the shell (12).

11. The bag (310) of claim 1, wherein each of the first front and rear angling portions (329) has an inner edge (330) forming a juncture angle (D) with the first crossing portion (327) that is 110-140°, when the bag (310) is empty and pressed flat.

12. The bag (310) of claim 11, wherein each of the second front and rear angling portions (329) has an inner edge (330) forming a juncture angle (D) with the second crossing portion (327) that is 110-140°, when the bag (310) is empty and pressed flat.

13. The bag (310) of claim 1, wherein the first crossing portion (327) has a first width between the first inner edge (328) and a first outer edge of the first crossing portion (327), and the first front angling portion (329) and the first rear angling portion (329) of the first base (322) have widths defined between inner and outer edges (328) thereof, and wherein the first width is smaller than the widths of the first front angling portion and the first rear angling portion (329).

14. The bag (310) of claim 1, wherein the first base (322) is formed of a continuous panel, and the first base is folded over itself at the first crossing portion, such that a first surface of the continuous panel forms an outer surface of the first front angling portion (329) and an inner surface of the first rear angling portion (329).

Patentansprüche

1. Sack (310) für das Gewichtheben und ähnliche Übungen, der dafür konfiguriert ist, mit einem Füllmaterial (16) gefüllt zu werden, wobei er Folgendes umfasst:

eine Hülle (12), die einen mittigen Körperabschnitt (312) umfasst, der zwischen einem ersten und einem entgegengesetzten zweiten Ende (315) länglich ist und einen Oberteil (316) und einen Unterteil (318) aufweist, die sich zwischen dem ersten und dem zweiten Ende (315) erstrecken, wobei die Hülle (12) ferner eine vordere und eine entgegengesetzte hintere Seite (320, 319) aufweist, wobei die Hülle (12) eine seitliche Mittellinie aufweist, die sich zwischen dem ersten und dem zweiten Ende (315) erstreckt, wobei der mittige Körperabschnitt (312) und das erste und das zweite Ende (315) der Hülle (12) zusammenwirken, um einen inneren Hohlraum zu definieren und zu umschließen, der zum Enthalten des Füllmaterials (16) konfiguriert ist, und wobei die Hülle (12) eine Öffnung (24) aufweist, die einen Zugang zu dem inneren Hohlraum und einem Verschlussmechanismus (26) gewährt, und einen Verschlussmechanismus (26), der zum selektiven Öffnen (24) und Schließen der Öffnung (24) konfiguriert ist, aufweist, und

eine Handgriff-Baugruppe, die Folgendes umfasst:

ein erstes Greifelement (323), das nahe einer ersten Verbindungsstelle zwischen dem Oberteil (316) und dem ersten Ende (315) mit der Hülle (12) verbunden ist, wobei sich das erste Greifelement (323) von der Hülle (12) aus in schiefen Winkeln nach außen bis zu dem Oberteil (316), dem ersten Ende (315) und der seitlichen Mittellinie erstreckt, und

eine erste Basis (322), die mit der Hülle (12) verbunden ist und sich auf der vorderen Seite (320) und der hinteren Seite (319) der Hülle (12) erstreckt und Folgendes aufweist:

einen ersten Kreuzungsabschnitt (327), der sich über den Oberteil (316) zwischen der vorderen Seite (320) und der hinteren Seite (319) nahe einer ersten Verbindungsstelle zwischen dem Oberteil (316) und dem ersten Ende (315) erstreckt,

einen ersten vorderen Winkelabschnitt (329), sich auf der vorderen Seite der Hülle (12) von dem ersten Ende (315) aus in schiefen Winkeln zu dem ersten Ende (315) und dem Oberteil der Hülle (12) bis zu dem Oberteil der Hülle (12) erstreckt, und

einen ersten hinteren Winkelabschnitt (329), sich auf der hinteren Seite der Hülle (12) von dem ersten Ende (315) aus in schiefen Winkeln zu dem ersten Ende (315) und dem Oberteil der Hülle (12) bis zu dem Oberteil der Hülle (12) erstreckt,

wobei sich der erste Kreuzungsabschnitt (327) zwischen dem ersten vorderen Winkelabschnitt (329) und dem ersten hinteren Winkelabschnitt (329) erstreckt,

wobei das erste Greifelement (323) Enden umfasst, die an der ersten Basis (322) mit der vorderen und der hinteren Seite (320, 319) der Hülle (12) verbunden sind, was eine erste Schlaufenkonfiguration zwischen diesen Verbindungen bildet, und wobei sich das erste Greifelement (323) von der ersten Basis (322) aus nach außen erstreckt,

wobei die Handgriff-Baugruppe ferner Folgendes umfasst:

ein zweites Greifelement (323), das nahe einer zweiten Verbindungsstelle zwischen dem Oberteil (316) und dem zweiten Ende (315) mit der Hülle (12) verbunden ist,

wobei sich das zweite Greifelement (323) von der Hülle (12) aus in schiefen Winkeln nach außen bis zu dem Oberteil (316), dem zweiten Ende (315) und der seitlichen Mittellinie (L) erstreckt, und

eine zweite Basis (322), die mit der Hülle (12) verbunden ist und sich auf der vorderen Seite (320) und der hinteren Seite (319) erstreckt und Folgendes aufweist:

einen zweiten Kreuzungsabschnitt (327), der sich über den Oberteil (316) zwischen der vorderen Seite (320) und der hinteren Seite (319) nahe einer zweiten Verbindungsstelle zwischen dem Oberteil (316) und dem zweiten Ende (315) erstreckt, und

einen zweiten vorderen Winkelabschnitt (329), sich auf der vorderen Seite der Hülle (12) von dem zweiten Ende (315) aus in schiefen Winkeln zu dem zweiten Ende (315) und dem Oberteil der Hülle (12) bis zu dem Oberteil der Hülle (12) erstreckt, und

einen zweiten hinteren Winkelabschnitt (329), sich auf der hinteren Seite der Hülle (12) von dem zweiten Ende (315) aus in schiefen Winkeln zu dem zweiten Ende und dem Oberteil der Hülle (12) bis zu dem Oberteil der Hülle (12) erstreckt,

wobei sich der zweite Kreuzungsabschnitt (327) zwischen dem zweiten vorderen Winkelabschnitt (329) und dem zweiten hinteren Winkelabschnitt (329) erstreckt,

wobei das zweite Greifelement (323) Enden umfasst, die an der zweiten Basis (322) mit der vorderen und der hinteren Seite der Hülle (12) verbunden sind, was eine zweite Schlaufenkonfiguration zwischen diesen Verbindungen bildet, und wobei sich das zweite Greifelement (323) von der zweiten Basis (322) aus nach außen erstreckt.

2. Sack (310) nach Anspruch 1, wobei die Hülle (12) aus einer einzigen Bahn (314) geformt ist, die sich um die vordere und die hintere Seite (320, 319) der Hülle (12) erstreckt und durch Nähte an dem ersten und dem zweiten Ende (315) und eine seitliche Naht (317) zwischen dem ersten und dem zweiten Ende (315) mit sich selbst verbunden ist.

3. Sack (310) nach Anspruch 2, wobei sich die seitliche Naht (317) über die hintere Seite (319) der Hülle (12) erstreckt und die Öffnung (24) auf der vorderen Seite der Hülle (12) definiert ist.

4. Sack (310) nach Anspruch 1, der ferner einen inneren Sack (135) umfasst, der in dem inneren Hohlraum positioniert und mit einer inneren Fläche der Hülle (12) verbunden ist, wobei der innere Sack (135) in Verbindung mit der Öffnung (24) steht und dafür konfiguriert ist, durch die Öffnung (24) mit dem Füllmaterial (16) gefüllt zu werden.

5. Sack (310) nach Anspruch 1, wobei der erste Kreuzungsabschnitt (327) eine erste innere Kante (328) aufweist, die sich über den Oberteil der Hülle (12) erstreckt, und der Hülle (12) und der zweite Kreuzungsabschnitt (327) eine zweite innere Kante (328) aufweist, die sich über den Oberteil der Hülle (12) erstreckt, und wobei die erste und die zweite innere Kante (328) jeweils Winkel (C) von 80 bis 100° mit dem Oberteil der Hülle (12) bilden, wenn der Sack (310) leer und flachgedrückt ist.

6. Sack (310) nach Anspruch 1, wobei die Hülle (12) eine rechteckige Form aufweist, die durch den Oberteil (316), den Unterteil (318) und das erste und das zweite Ende (315) definiert wird, und die erste Verbindungsstelle und die zweite Verbindungsstelle Ecken der rechteckigen Form entlang des Oberteils der Hülle (12) sind.

7. Sack (310) nach Anspruch 1, wobei die Hülle (12) eine Länge, die zwischen dem ersten und dem zweiten Ende (315) gemessen wird, und eine Höhe, die zwischen dem Oberteil (316) und dem Unterteil (318) gemessen wird, aufweist und wobei die Länge zumindest das Zweifache der Höhe beträgt.

8. Sack (310) nach Anspruch 1, wobei die Hülle (12) so konfiguriert ist, dass sie eine ovale Form aufweist, wenn sie von dem ersten oder dem zweiten Ende (315) aus betrachtet wird.

9. Sack (310) nach Anspruch 1, wobei sich der erste vordere Winkelabschnitt (329) der ersten Basis auf der vorderen Seite der Hülle (12) von dem ersten Ende (315) bis zu dem Oberteil der Hülle (12) erstreckt und sich der erste hintere Winkelabschnitt (329) der ersten Basis (322) auf der hinteren Seite der Hülle (12) von dem ersten Ende (315) bis zu dem Oberteil der Hülle (12) erstreckt.

10. Sack (310) nach Anspruch 9, wobei sich der zweite vordere Winkelabschnitt (329) der zweiten Basis auf der vorderen Seite der Hülle (12) von dem zweiten Ende (315) bis zu dem Oberteil der Hülle (12) erstreckt und sich der zweite hintere Winkelabschnitt der zweiten Basis (322) auf der hinteren Seite der Hülle (12) von dem zweiten Ende (315) bis zu dem Oberteil der Hülle (12) erstreckt.

11. Sack (310) nach Anspruch 1, wobei jeder von dem ersten vorderen und dem hinteren Winkelabschnitt (329) eine innere Kante (330) aufweist, die einen Verbindungswinkel (D) mit dem ersten Kreuzungsabschnitt (327) bildet, der 110 bis 140° beträgt, wenn der Sack (310) leer und flachgedrückt ist.

12. Sack (310) nach Anspruch 11, wobei jeder von dem zweiten vordere und dem hinteren Winkelabschnitt (329) eine innere Kante (330) aufweist, die einen Verbindungswinkel (D) mit dem zweiten Kreuzungsabschnitt (327) bildet, der 110 bis 140° beträgt, wenn der Sack (310) leer und flachgedrückt ist.

13. Sack (310) nach Anspruch 1, wobei der erste Kreuzungsabschnitt (327) eine erste Breite zwischen der ersten inneren Kante (328) und einer ersten äußeren Kante des ersten Kreuzungsabschnitts (327) aufweist und der erste vordere Winkelabschnitt (329) und der erste hintere Winkelabschnitt (329) der ersten Basis (322) Breiten aufweisen, die zwischen inneren und äußeren Kanten (328) derselben definiert sind, und wobei die erste Breite kleiner ist als die Breiten des ersten vorderen Winkelabschnitts und des ersten hinteren Winkelabschnitts (329).

14. Sack (310) nach Anspruch 1, wobei die erste Basis (322) aus einer durchgehenden Bahn geformt ist und die erste Basis an dem ersten Kreuzungsabschnitt derart über sich selbst umgeschlagen ist, dass eine erste Fläche der durchgehenden Bahn eine äußere Fläche des ersten vorderen Winkelabschnitts (329) und eine innere Fläche des ersten hinteren Winkelabschnitts (329) bildet.

Revendications

1. Sac (310) destiné à l'haltérophilie et à des exercices similaires, configuré pour être rempli avec un matériau de charge (16), comprenant :

   une enveloppe (12) comprenant une partie de corps central (312), laquelle est allongée entre des première et deuxième extrémités opposées (315) et comporte une partie supérieure (316) et une partie inférieure (318) s'étendant entre les première et deuxième extrémités (315), l'enveloppe (12) présentant en outre des côtés avant et arrière (320, 319) opposés, l'enveloppe (12) présentant une ligne médiane latérale s'étendant entre les première et deuxième extrémités (315), dans lequel la partie de corps central (312) et les première et deuxième extrémités (315) de l'enveloppe (12) se combinent pour définir et entourer une cavité intérieure configurée pour contenir le matériau de charge (16), et dans lequel l'enveloppe (12) présente une ouverture (24) fournissant un accès à la cavité

intérieure et un mécanisme de fermeture (26) configuré pour ouvrir (24) et fermer sélectivement l'ouverture (24) ; et
un ensemble de poignée comprenant :

un premier élément de préhension (323) relié à l'enveloppe (12) à proximité d'une première jonction entre la partie supérieure (316) et la première extrémité (315), dans lequel le premier élément de préhension (323) s'étend vers l'extérieur à partir de l'enveloppe (12) selon des angles obliques par rapport à la partie supérieure (316), la première extrémité (315) et la ligne médiane latérale, et
une première base (322) reliée à l'enveloppe (12) et s'étendant sur le côté avant (320) et le côté arrière (319) de l'enveloppe (12) et présentant :

une première partie transversale (327) s'étendant par-dessus la partie supérieure (316) entre le côté avant (320) et le côté arrière (319) à proximité de la première jonction entre la partie supérieure (316) et la première extrémité (315),
une première partie inclinée avant (329) s'étendant sur le côté avant de l'enveloppe (12) à partir de la première extrémité (315) vers la partie supérieure de l'enveloppe (12) selon des angles obliques par rapport à la première extrémité (315) et la partie supérieure de l'enveloppe (12), et
une première partie inclinée arrière (329) s'étendant sur le côté arrière de l'enveloppe (12) à partir de la première extrémité (315) vers la partie supérieure de l'enveloppe (12) selon des angles obliques par rapport à la première extrémité (315) et à la partie supérieure de l'enveloppe (12),
dans lequel la première partie transversale (327) s'étend entre la première partie inclinée avant (329) et la première partie inclinée arrière (329),

dans lequel le premier élément de préhension (323) comprend des extrémités reliées aux côtés avant et arrière (320, 319) de l'enveloppe (12) au niveau de la première base (322), formant une première configuration en boucle entre ces liaisons et dans lequel le premier élément de préhension (323) s'étend vers l'extérieur à partir de la première base (322),

dans lequel l'ensemble de poignée comprend en outre :

un deuxième élément de préhension (323) relié à l'enveloppe (12) à proximité d'une deuxième jonction entre la partie supérieure (316) et la deuxième extrémité (315),
dans lequel le deuxième élément de préhension (323) s'étend vers l'extérieur à partir de l'enveloppe (12) selon des angles obliques par rapport à la partie supérieure (316), à la deuxième extrémité (315) et à la ligne médiane latérale (L),
une deuxième base (322) reliée à l'enveloppe (12) et s'étendant sur le côté avant (320) et le côté arrière (319) et présentant :

une deuxième partie transversale (327) s'étendant par-dessus la partie supérieure (316) entre le côté avant (320) et le côté arrière (319) à proximité d'une deuxième jonction entre la partie supérieure (316) et la première extrémité (315), et
une deuxième partie inclinée avant (329) s'étendant sur le côté avant de l'enveloppe (12) à partir de la deuxième extrémité (315) vers la partie supérieure de l'enveloppe (12) selon des angles obliques par rapport à la première extrémité (315) et la partie supérieure de l'enveloppe (12), et
une deuxième partie inclinée arrière (329) s'étendant sur le côté arrière de l'enveloppe (12) à partir de la deuxième extrémité vers la partie supérieure de l'enveloppe (12) selon des angles obliques par rapport à la deuxième extrémité (315) et à la partie supérieure de l'enveloppe (12),
dans lequel la deuxième partie transversale (327) s'étend entre la deuxième partie inclinée avant (329) et la deuxième partie inclinée arrière (329),

dans lequel le deuxième élément de préhension (323) comprend des extrémités reliées aux côtés avant et arrière de l'enveloppe (12) au niveau de la deuxième base (322), formant une deuxième configuration en boucle entre ces liaisons, et dans lequel le deuxième élément de préhension (323) s'étend vers l'extérieur à partir de la deuxième base (322).

2. Sac (310) selon la revendication 1, dans lequel l'enveloppe (12) est constituée d'un seul panneau (314) s'étendant autour des côtés avant et arrière (320,

319) de l'enveloppe (12) et relié à lui-même par des coutures au niveau des première et deuxième extrémités (315) et une couture latérale (317) s'étendant entre les première et deuxième extrémités (315).

3. Sac (310) selon la revendication 2, dans lequel la couture latérale (317) s'étend à travers le côté arrière (319) de l'enveloppe (12), et l'ouverture (24) est définie sur le côté avant de l'enveloppe (12).

4. Sac (310) selon la revendication 1, comprenant en outre un sac intérieur (135) positionné dans la cavité intérieure et relié à une surface intérieure de l'enveloppe (12), dans lequel le sac intérieur (135) est en communication avec l'ouverture (24) et configuré pour être rempli avec le matériau de charge (16) à travers l'ouverture (24).

5. Sac (310) selon la revendication 1, dans lequel la première partie transversale (327) comporte un premier bord intérieur (328) s'étendant sur la partie supérieure de l'enveloppe (12) et la deuxième partie transversale (327) comporte un deuxième bord intérieur (328) s'étendant sur la partie supérieure de l'enveloppe (12), et dans lequel les premier et deuxième bords intérieurs (328) forment respectivement des angles (C) de 80-100° avec la partie supérieure de l'enveloppe (12) lorsque le sac (310) est vide et aplati.

6. Sac (310) selon la revendication 1, dans lequel l'enveloppe (12) présente une forme rectangulaire définie par la partie supérieure (316), la partie inférieure (318) et les première et deuxième extrémités (315), et la première jonction et la deuxième jonction sont des coins de la forme rectangulaire le long de la partie supérieure de l'enveloppe (12).

7. Sac (310) selon la revendication 1, dans lequel l'enveloppe (12) présente une longueur mesurée entre les première et deuxième extrémités (315) et une hauteur mesurée entre le partie supérieure (316) et la partie inférieure (318), et dans lequel la longueur est égale à au moins deux fois la hauteur.

8. Sac (310) selon la revendication 1, dans lequel l'enveloppe (12) est configurée pour présenter une forme ovale, vue depuis la première ou la deuxième extrémité (315).

9. Sac (310) selon la revendication 1, dans lequel la première partie inclinée avant (329) de la première base s'étend sur le côté avant de l'enveloppe (12) à partir de la première extrémité (315) vers la partie supérieure de l'enveloppe (12), et la première partie inclinée arrière (329) de la première base (322) s'étend sur le côté arrière de l'enveloppe (12) à partir de la première extrémité (315) vers la partie supérieure de l'enveloppe (12).

10. Sac (310) selon la revendication 9, dans lequel la première partie inclinée avant (329) de la deuxième base s'étend sur le côté avant de l'enveloppe (12) à partir de la deuxième extrémité (315) vers la partie supérieure de l'enveloppe (12), et la deuxième partie inclinée arrière de la deuxième base (322) s'étend sur le côté arrière de l'enveloppe (12) à partir de la deuxième extrémité (315) vers la partie supérieure de l'enveloppe (12).

11. Sac (310) selon la revendication 1, dans lequel chacune parmi les premières parties inclinées avant et arrière (329) présente un bord intérieur (330) formant un angle de jonction (D) avec la première partie transversale (327), lequel mesure 110-140°, lorsque le sac (310) est vide et aplati.

12. Sac (310) selon la revendication 11, dans lequel chacune parmi les deuxièmes parties inclinées avant et arrière (329) présente un bord intérieur (330) formant un angle de jonction (D) avec la deuxième partie transversale (327), lequel mesure 110-140°, lorsque le sac (310) est vide et aplati.

13. Sac (310) selon la revendication 1, dans lequel la première partie transversale (327) présente une première largeur entre le premier bord intérieur (328) et un premier bord extérieur de la première partie transversale (327), et la première partie inclinée avant (329) et la première partie inclinée arrière (329) de la première base (322) présentent des largeurs définies entre des bords intérieur et extérieur (328) de celles-ci, et dans lequel la première largeur est inférieure aux largeurs de la première partie inclinée avant et de la première partie inclinée arrière (329).

14. Sac (310) selon la revendication 1, dans lequel la première base (322) est constituée d'un panneau continu, et la première base est reliée sur elle-même au niveau de la première partie transversale, de telle façon qu'une première surface du panneau continu forme une surface extérieure de la première partie inclinée avant (329) et une surface intérieure de la première partie inclinée arrière (329).

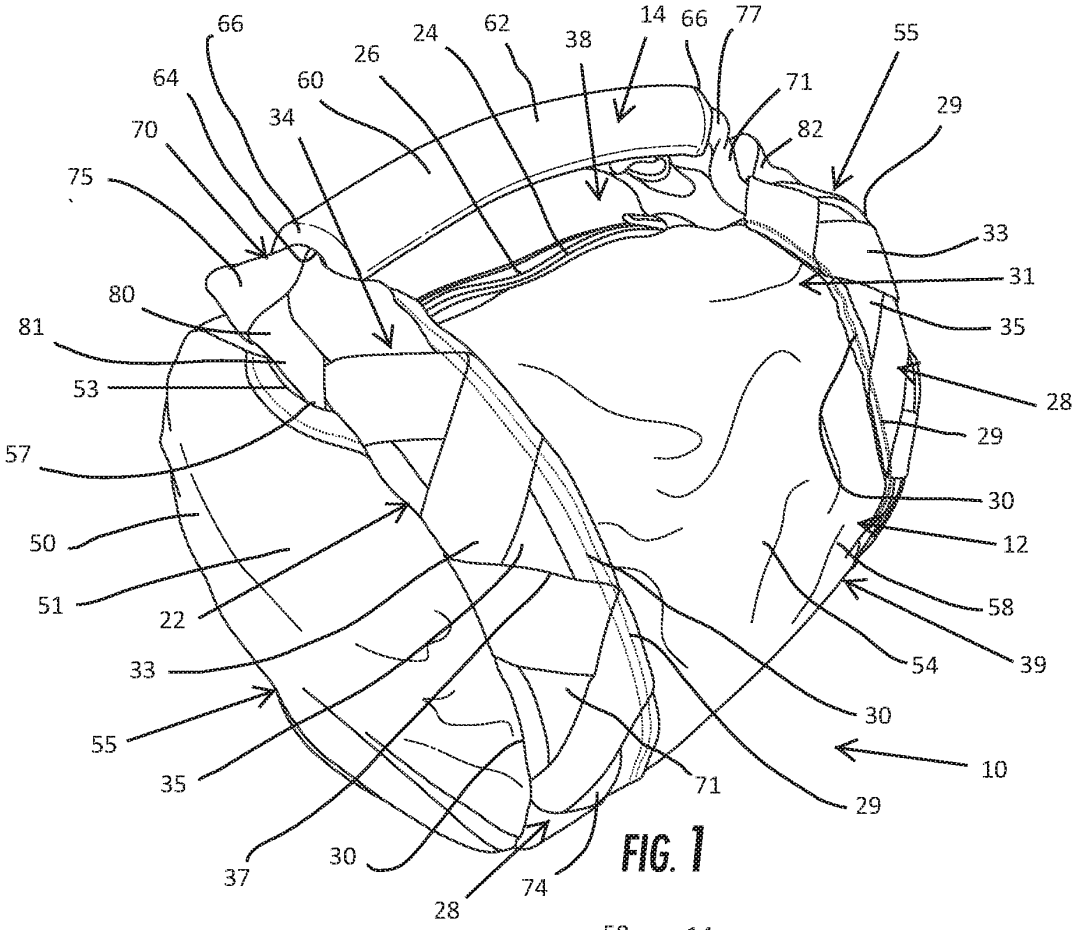
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FIG. 1

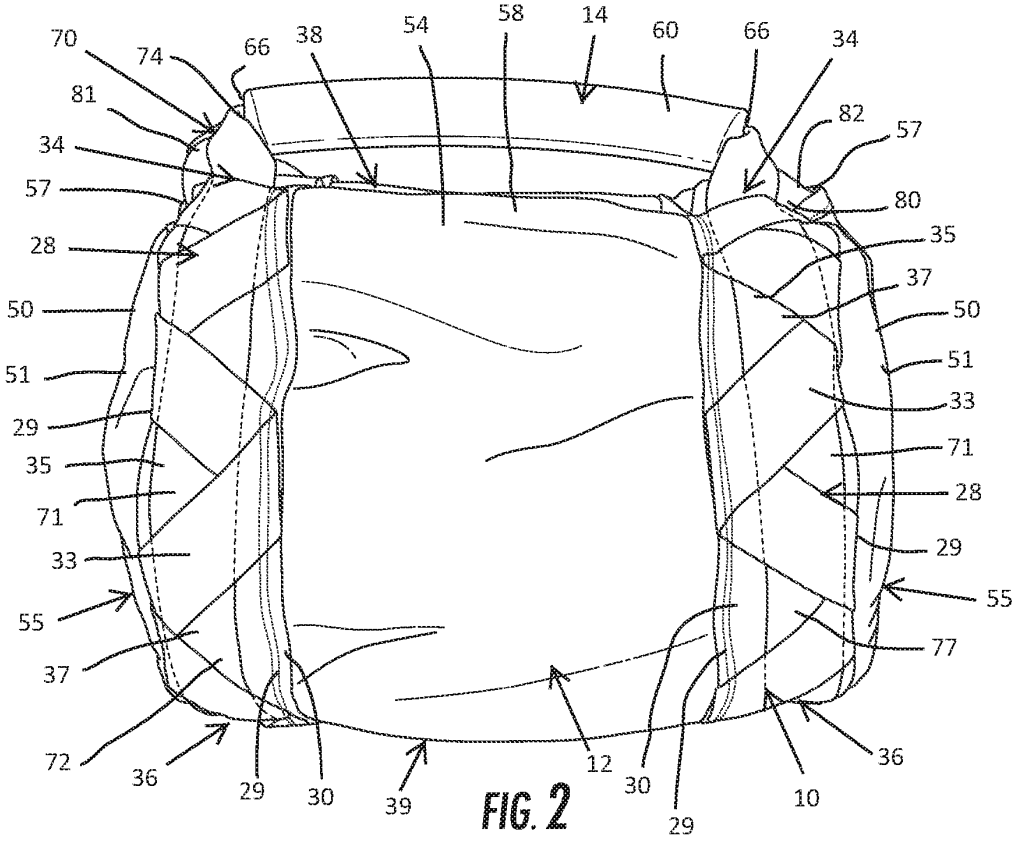
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FIG. 2

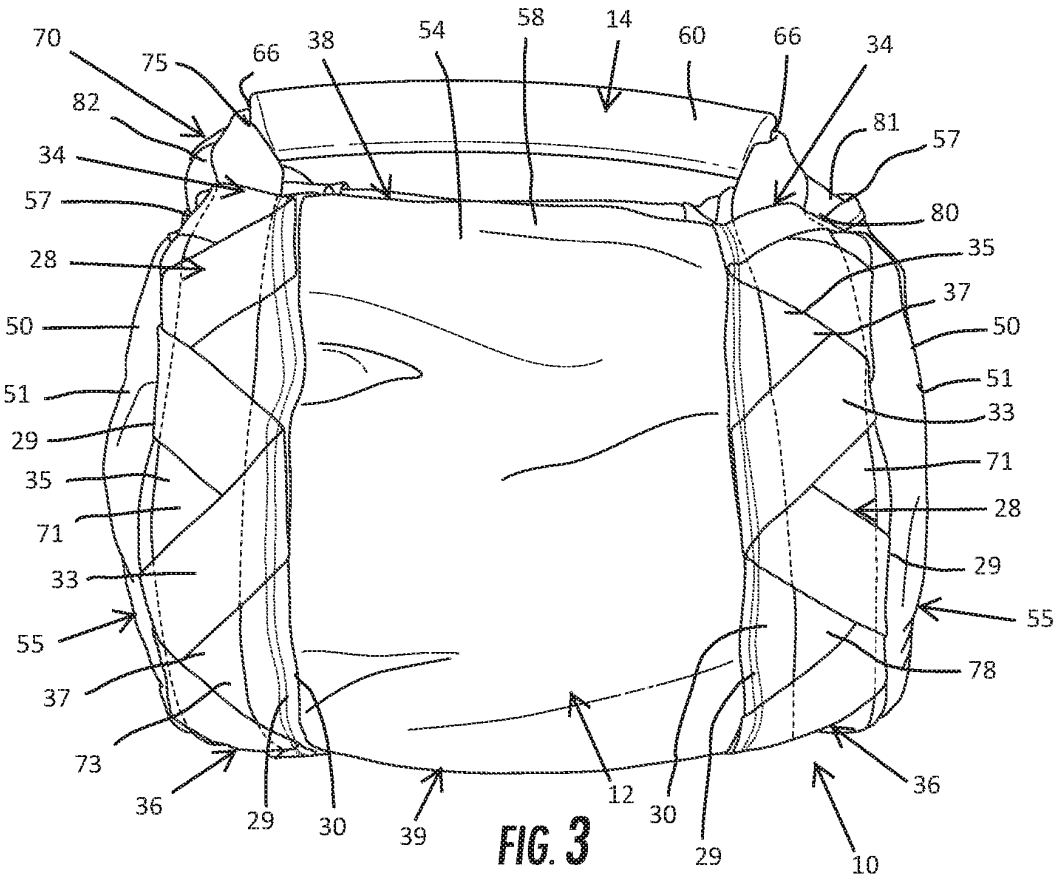
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FIG. 3

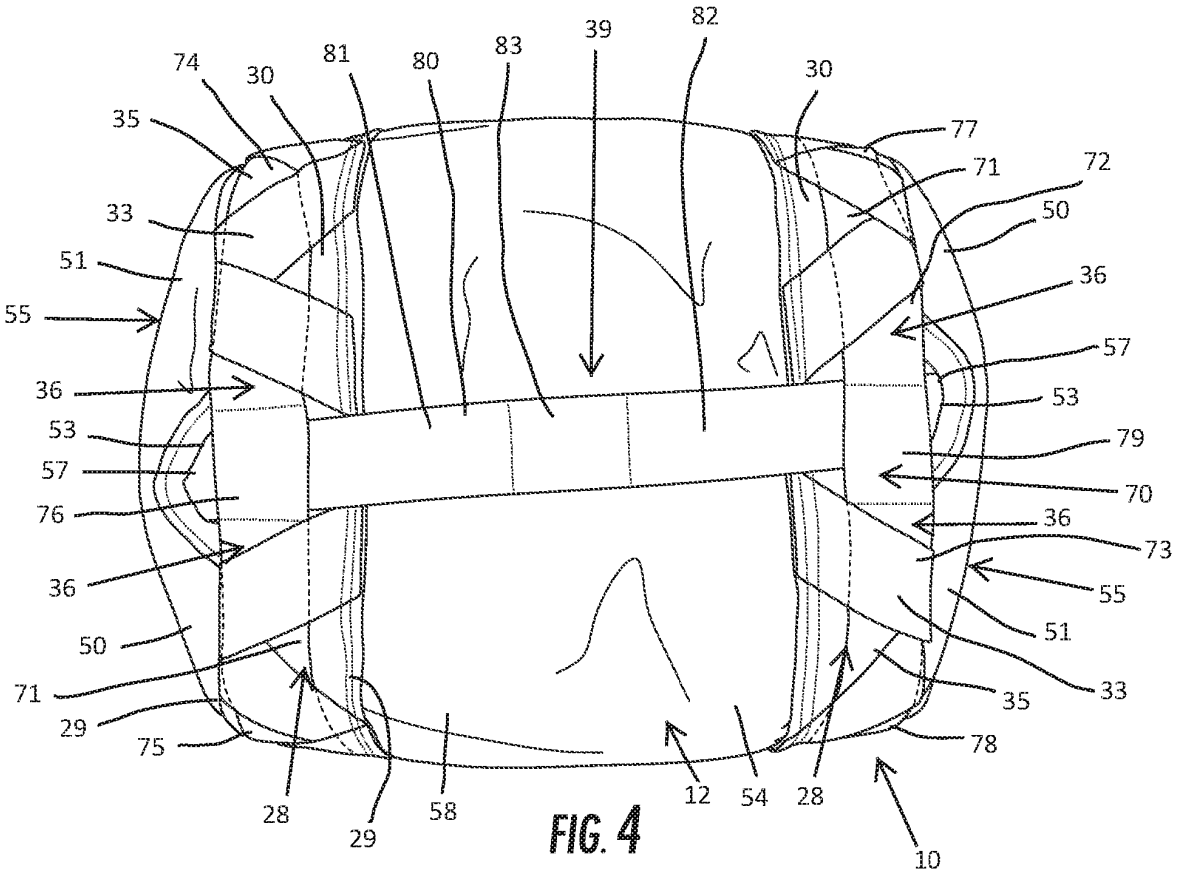
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FIG. 4

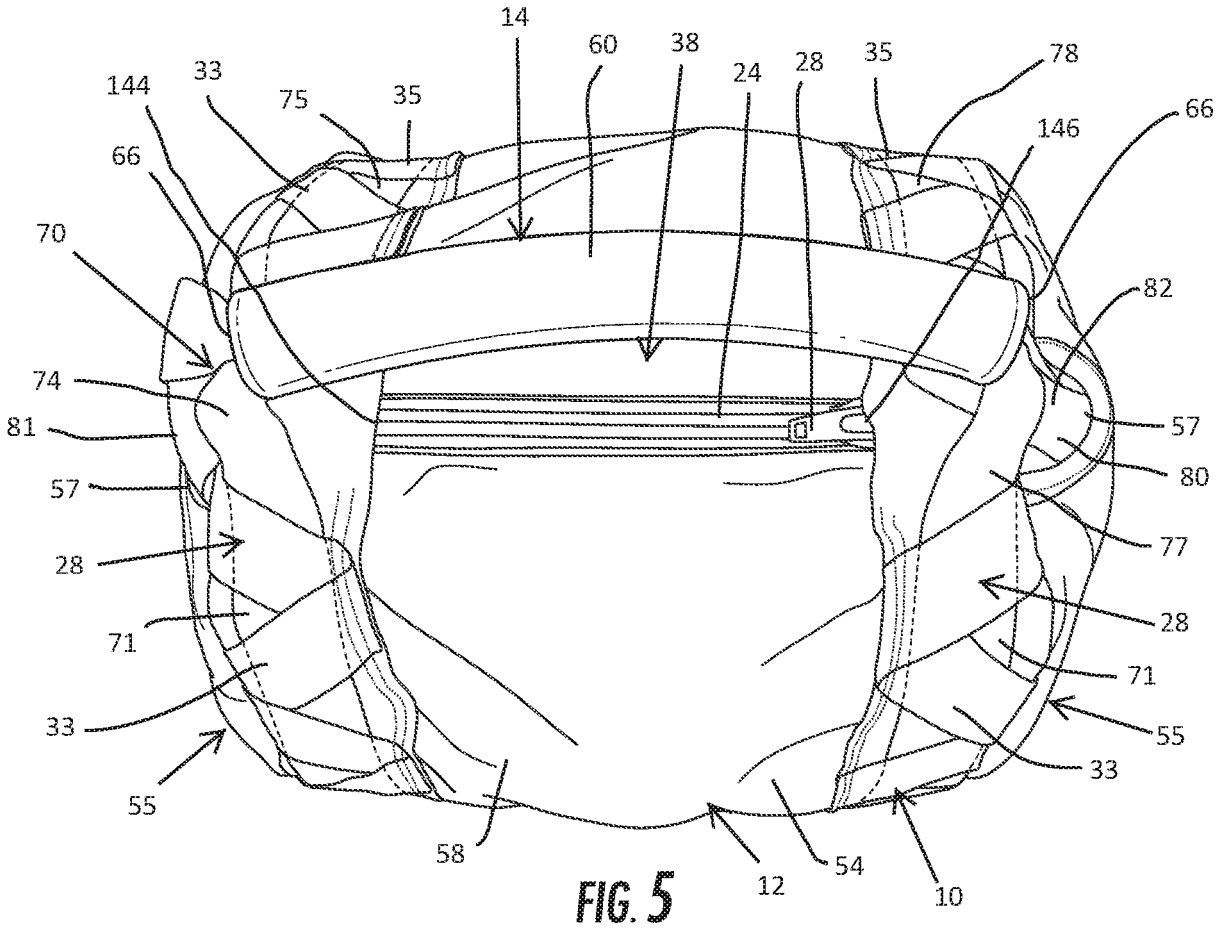
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FIG. 5

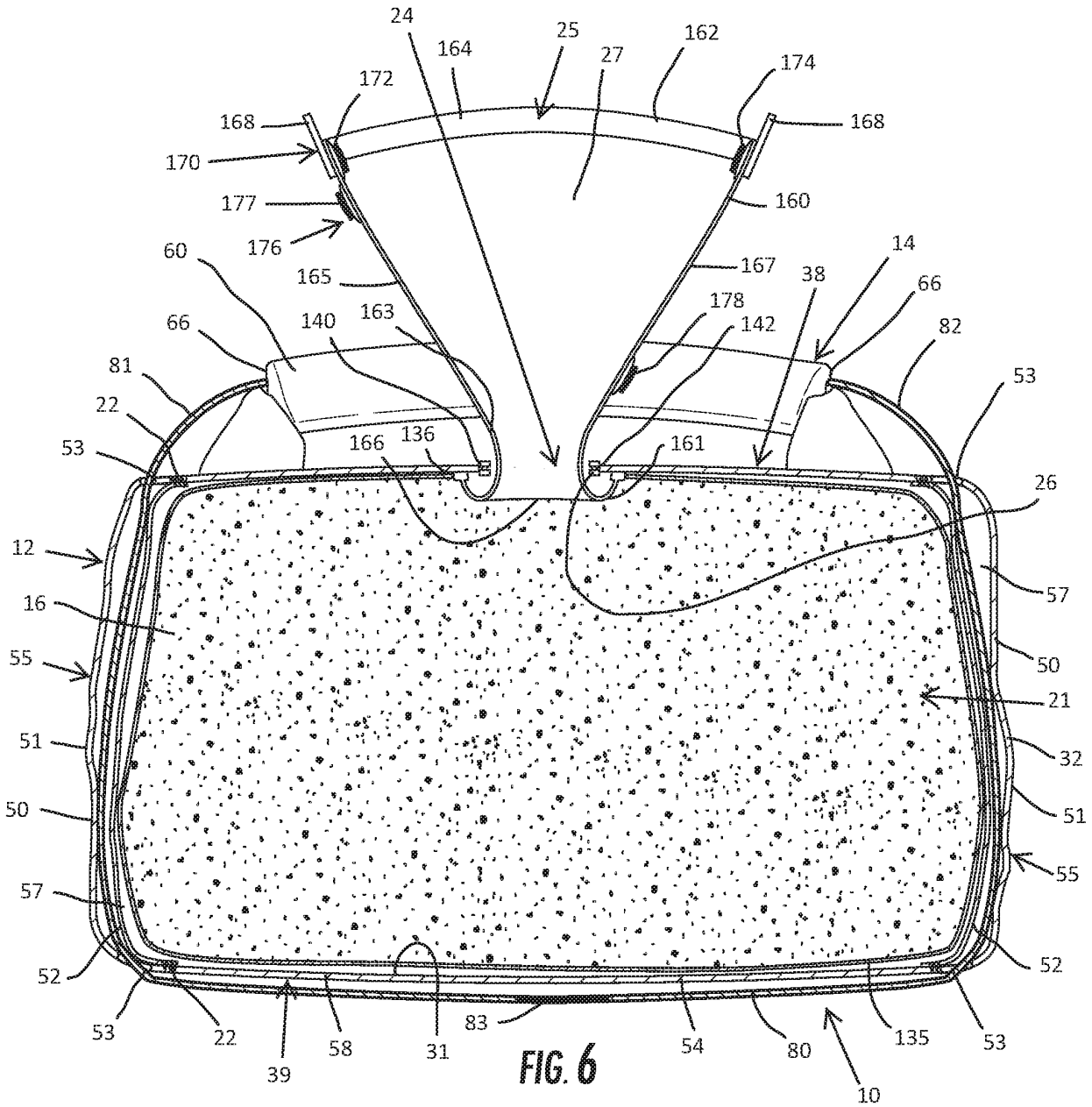
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FIG. 6

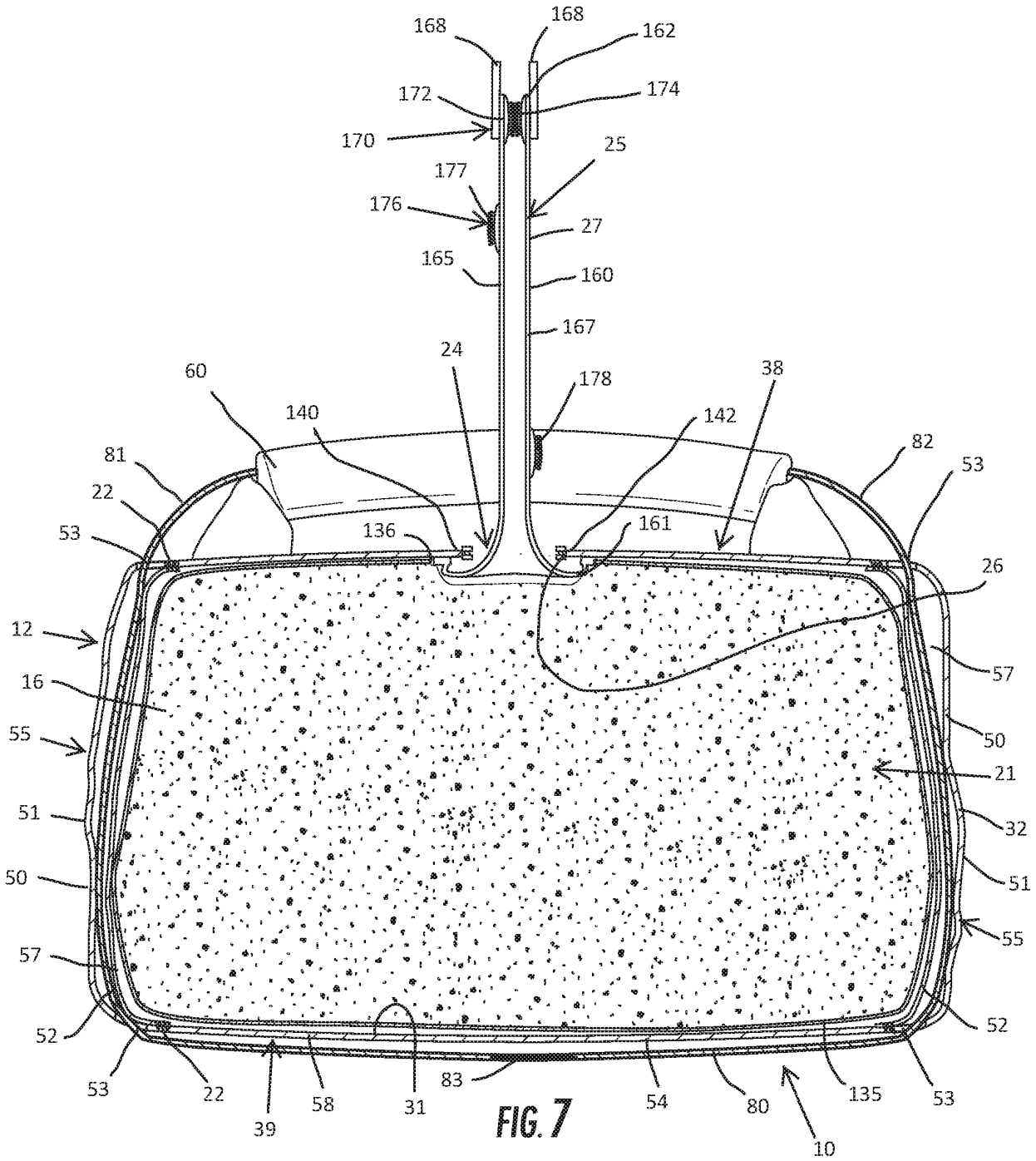
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FIG. 7

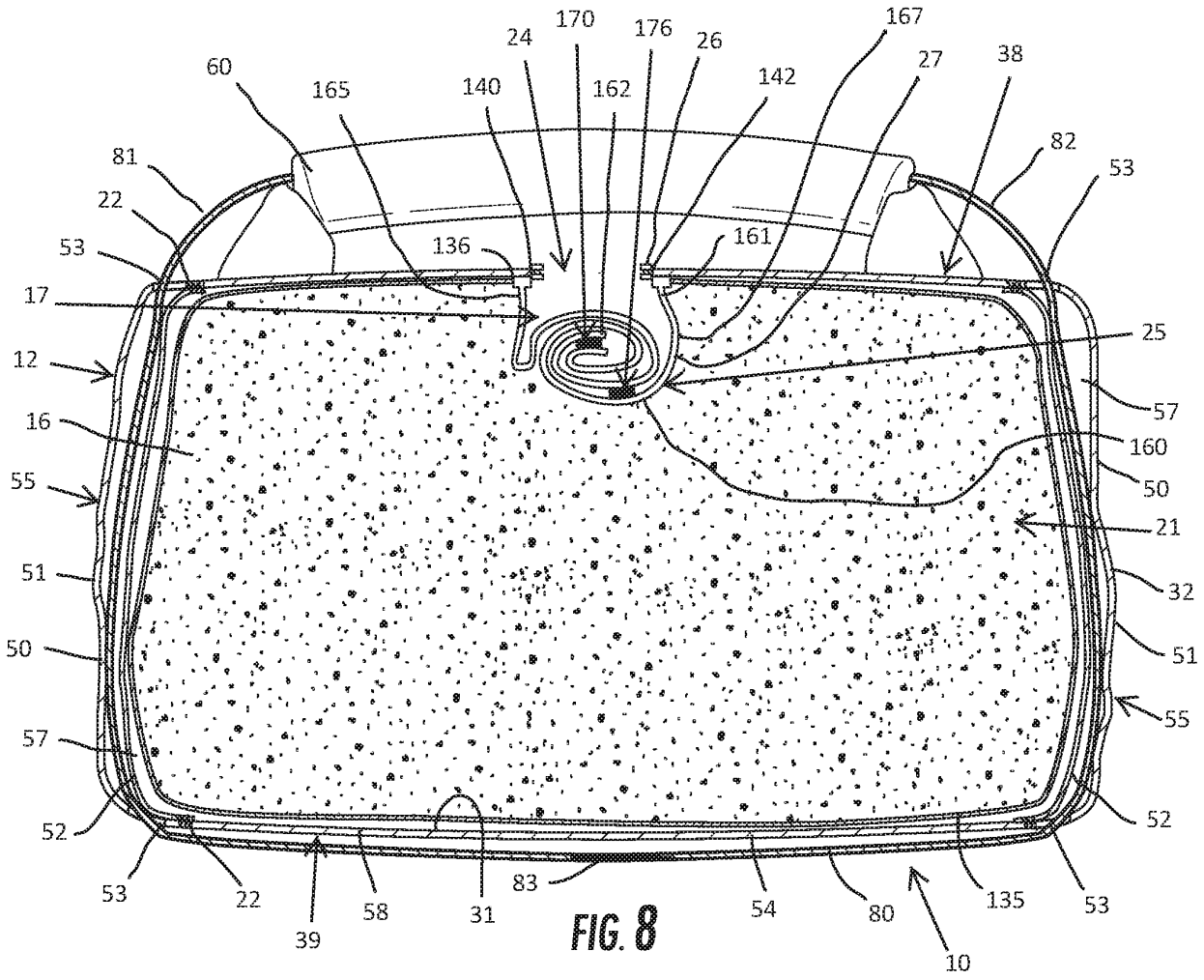
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FIG. 8

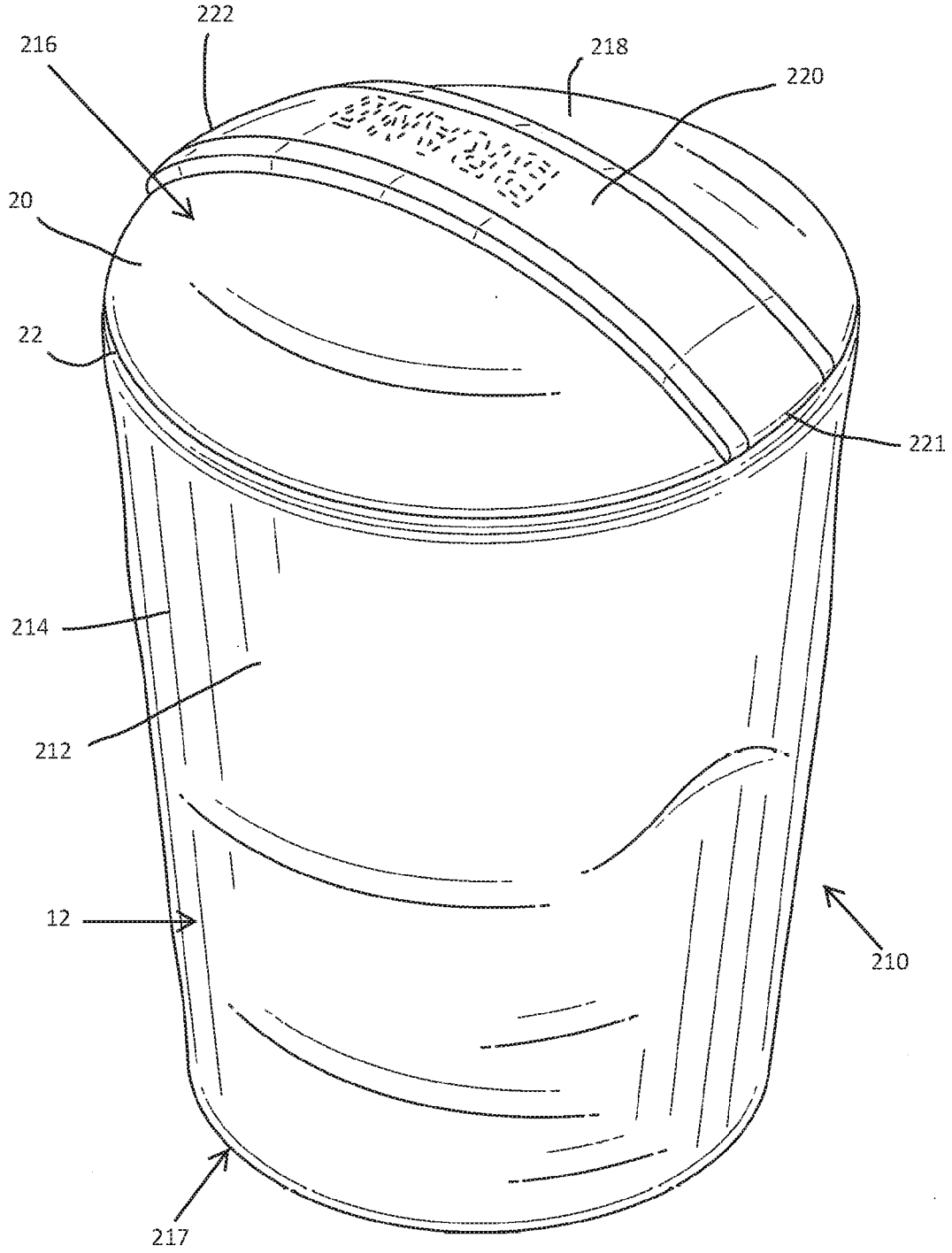

FIG. 9

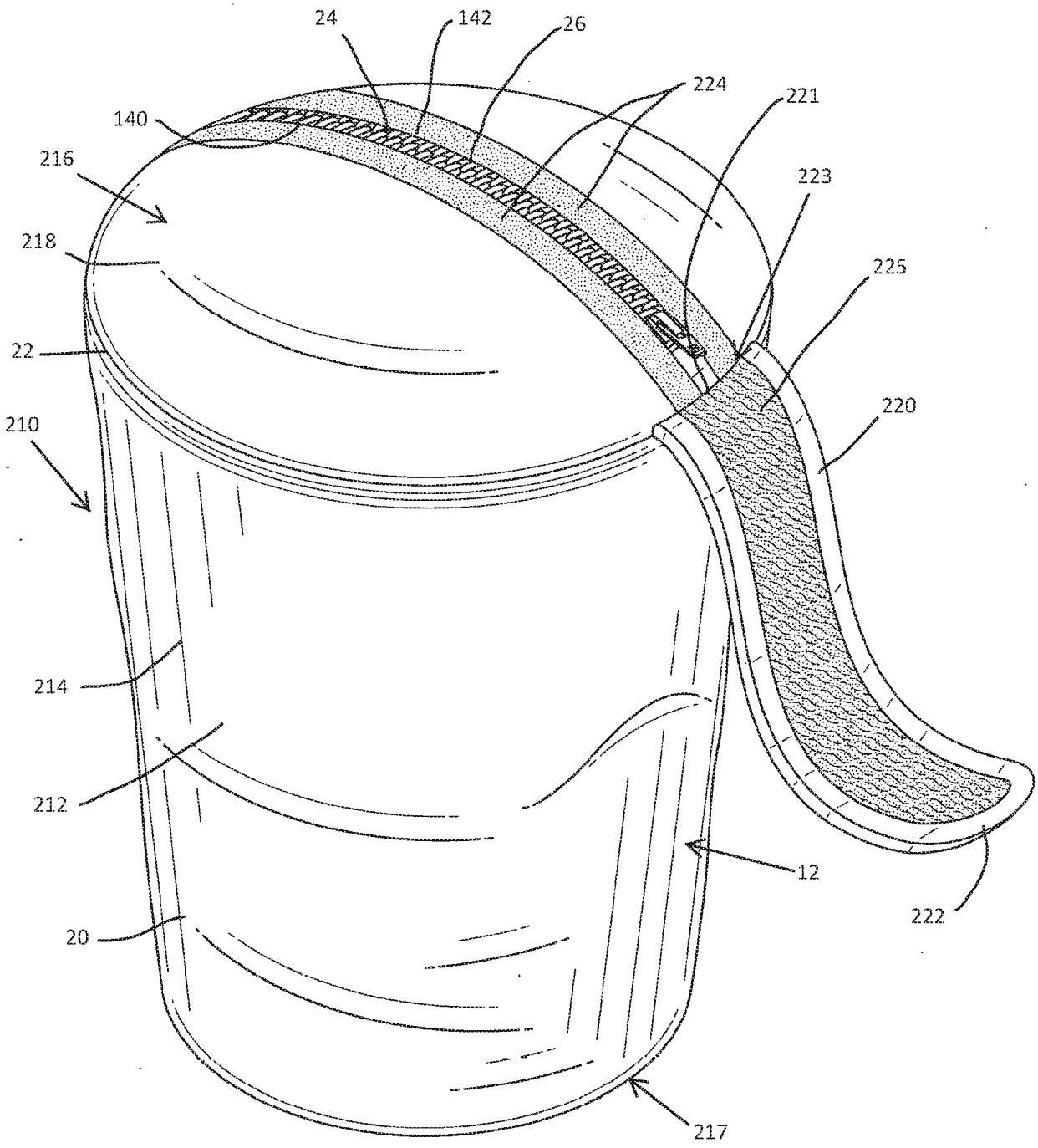
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FIG. 10

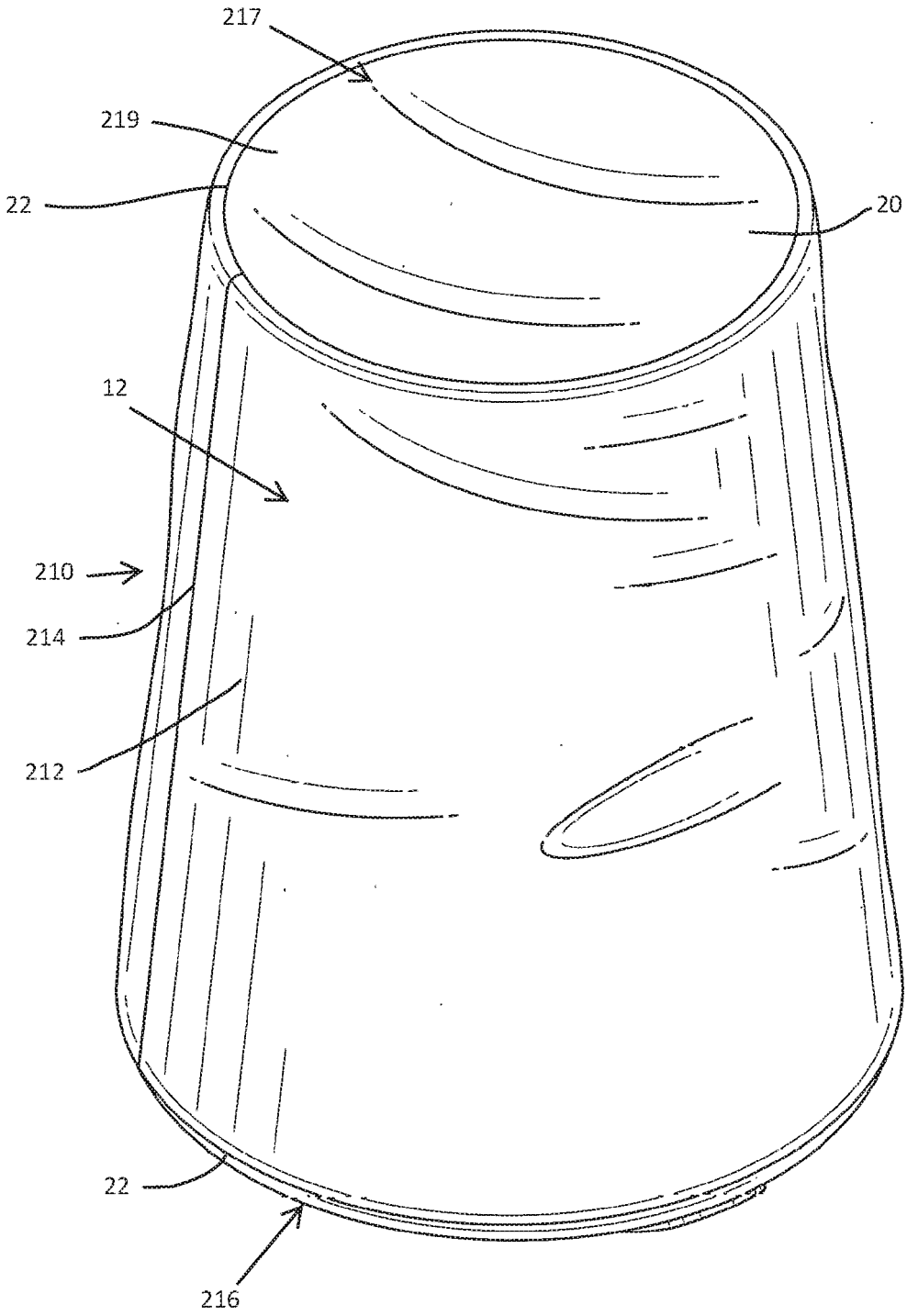

FIG. 10A

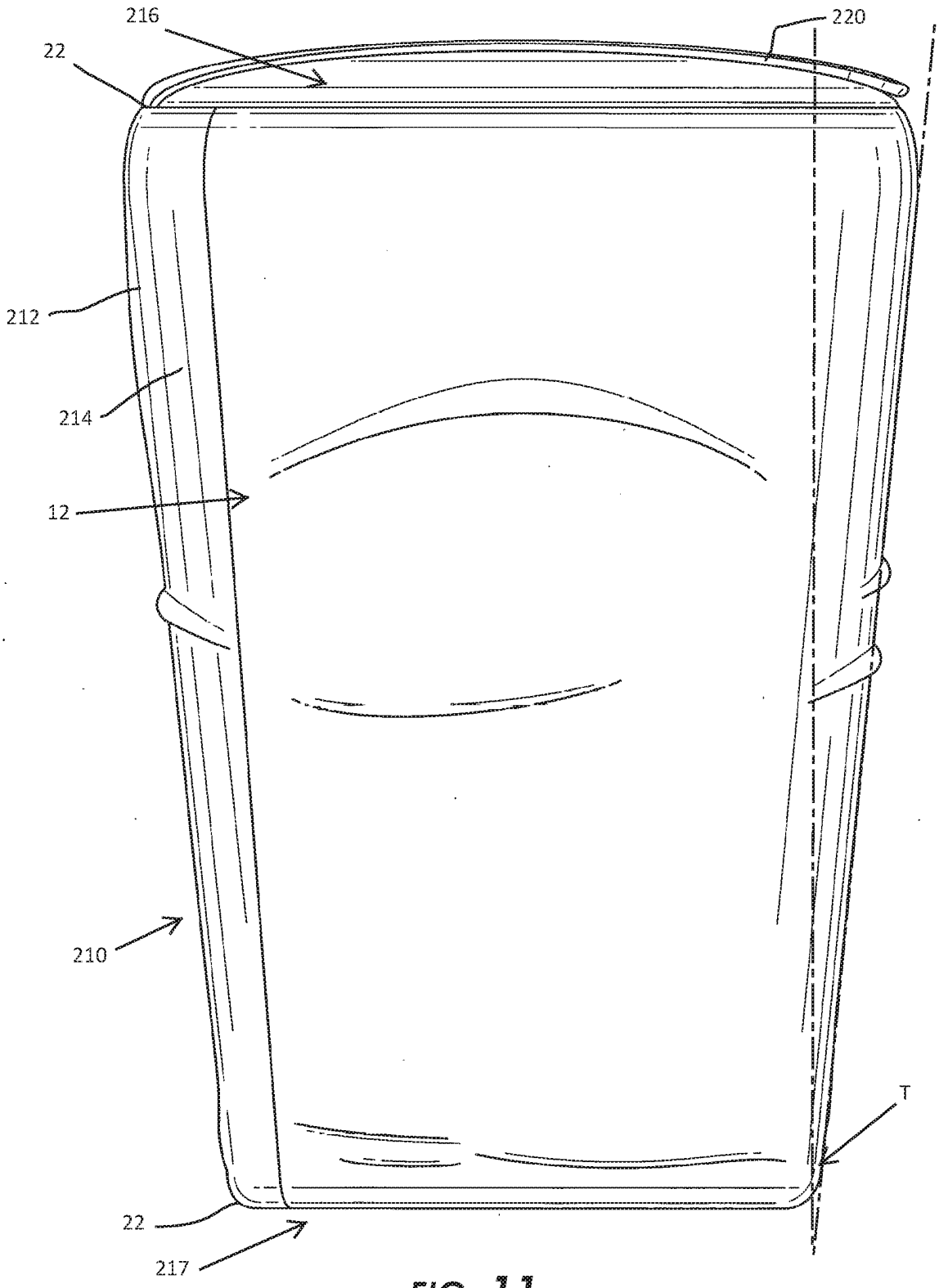

FIG. 11

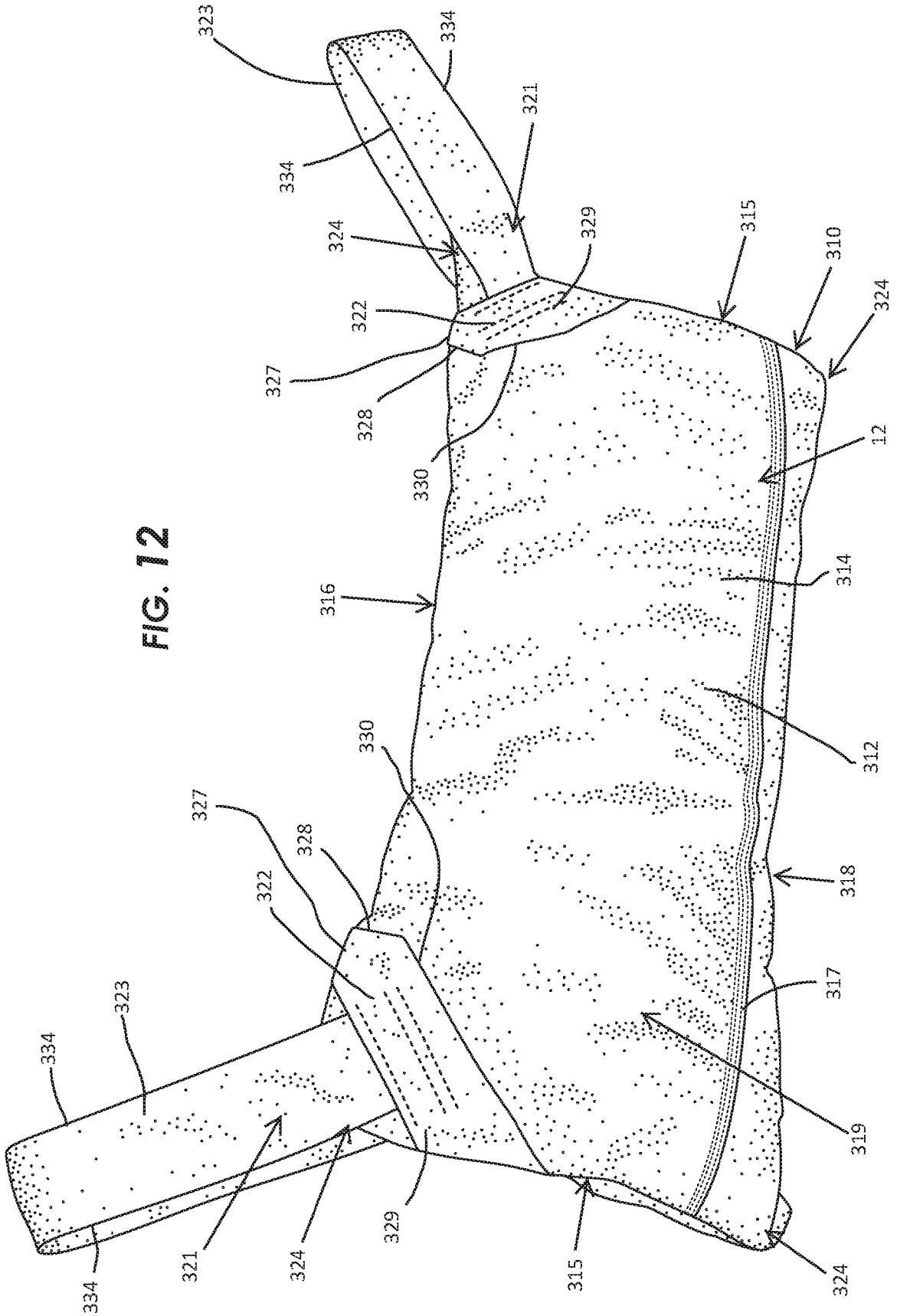
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FIG. 12

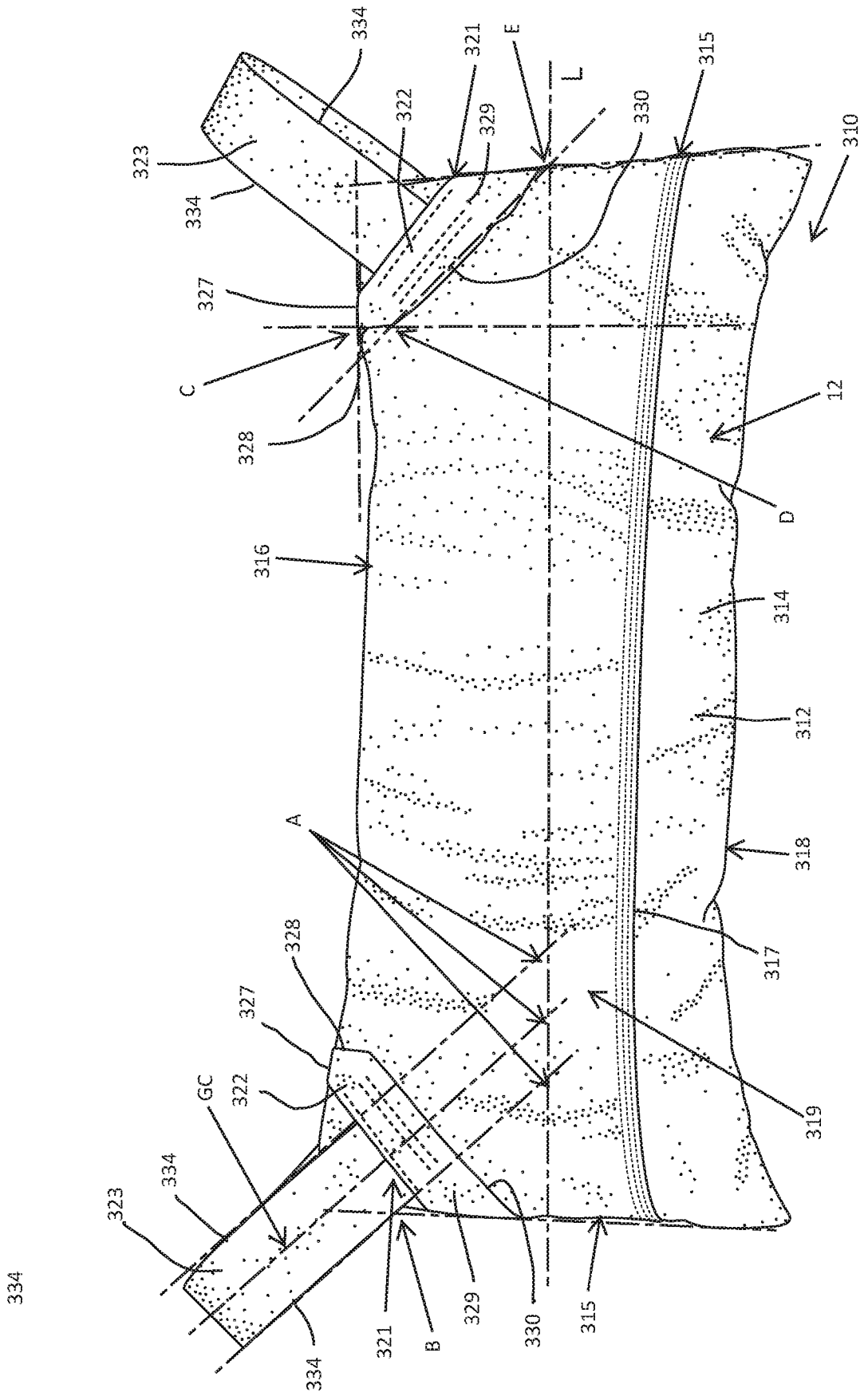
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FIG. 13

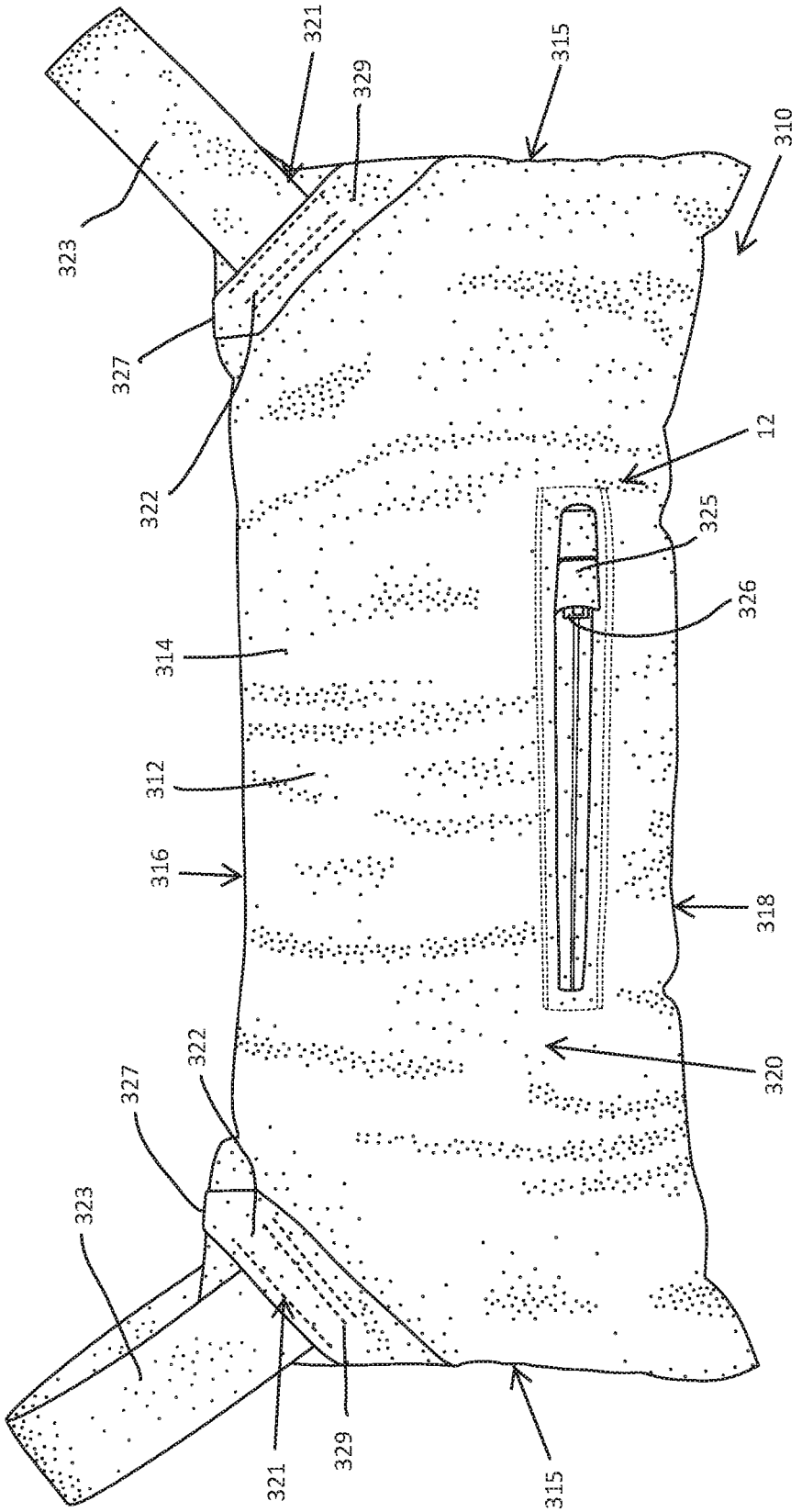
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FIG. 14

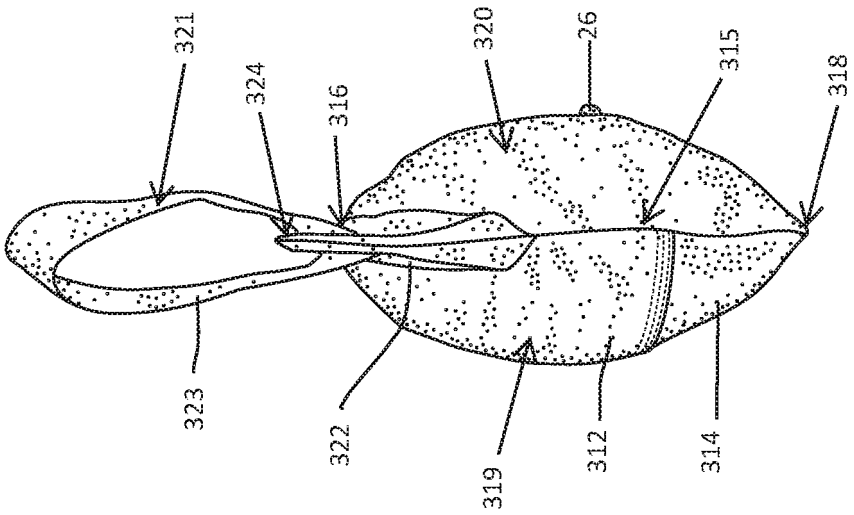
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FIG. 16

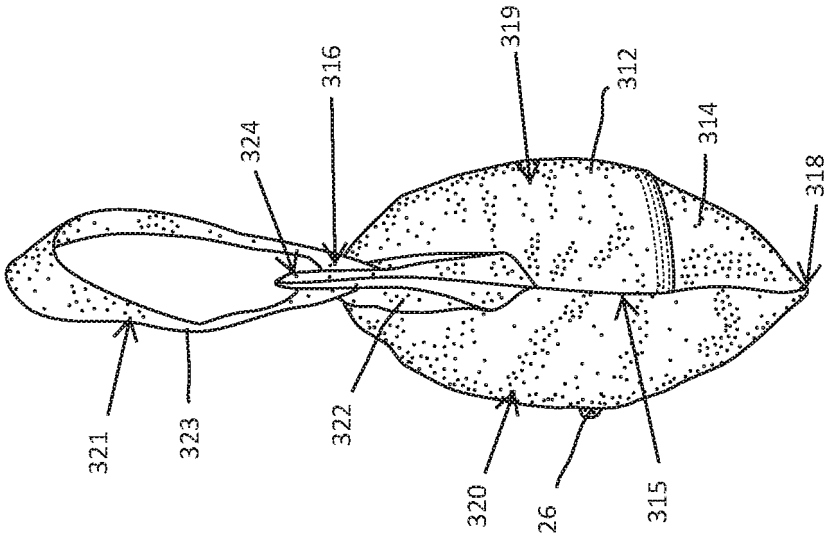
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FIG. 15

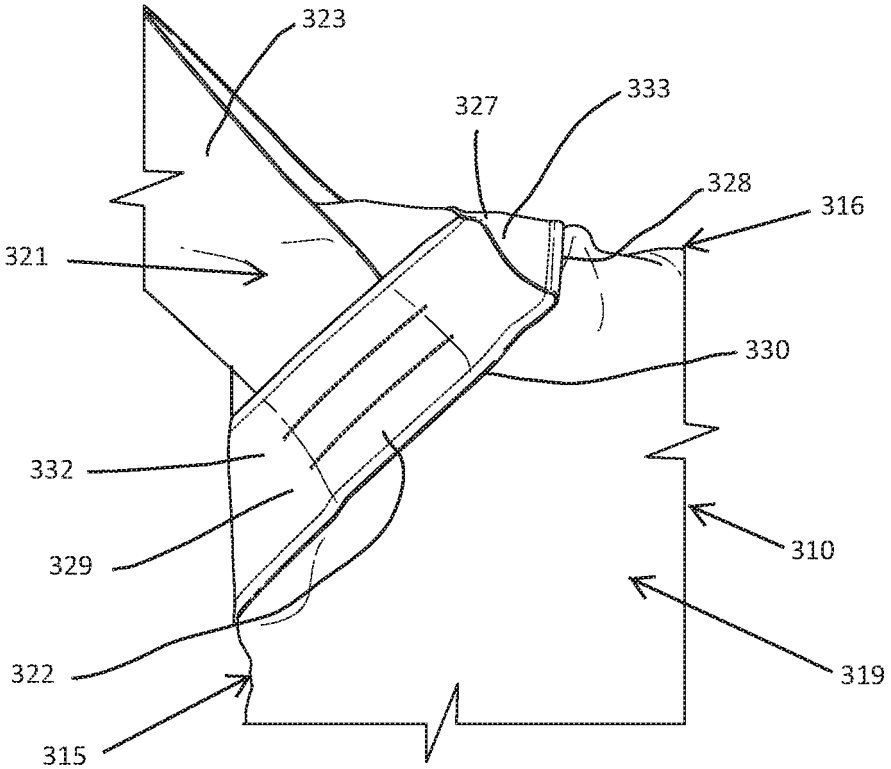
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FIG. 17

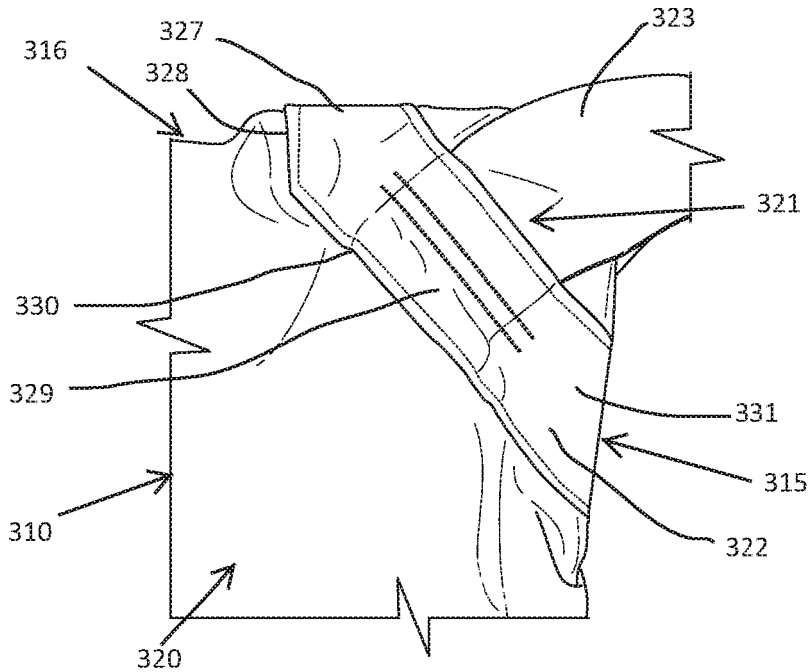
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FIG. 18

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Patent documents cited in the description

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