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(54) Title: CARRYING DEVICE FOR TRANSPORTING ELONGATED OBJECTS

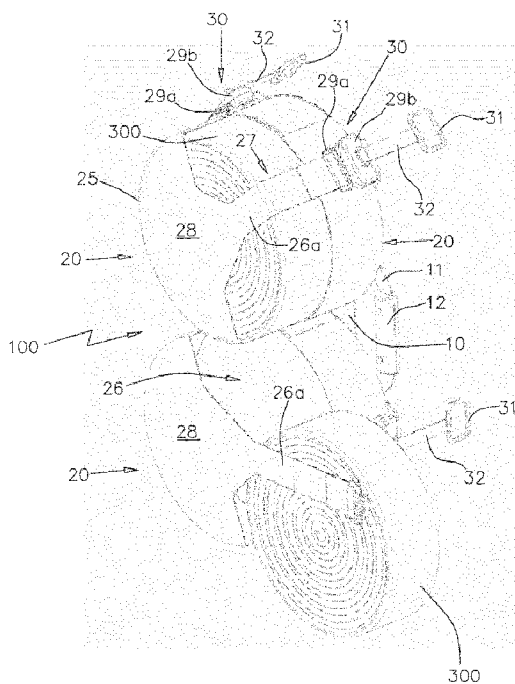


FIG. 4

(57) Abstract: It comprises carrying means (20) for carrying at least one object (300) and release means (30) for releasing at least one object (300) such that the object (300) is unloaded from the respective carrying means (20). The carrying means (20) comprise at least one housing (25) for receiving objects (300) and having one opening (26) through which the object (300) can be loaded into or unloaded from the respective housing (25). The release means (30) are adapted to allow at least one object (300) to be selectively unloaded from any of the housings (25).

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CARRYING DEVICE FOR TRANSPORTING ELONGATED OBJECTS

TECHNICAL FIELD

A carrying device is herein disclosed for transporting elongated objects as defined in the preamble of claim 1.

The present carrying device is useful for carrying and transporting, for example, fire hoses for forest fire fighting and the like. The present device is not however limited to applications involving carrying fire hoses but it can be used to any applications involving elongated objects such as cables, ropes and similar objects.

BACKGROUND ART

Fire fighters have to carry heavy equipment long distances in extreme conditions when battling to put out fires. In this respect, the transportation of fire hoses is extremely difficult and dangerous for them.

In the particular field of fire fighting in environments such as forests, rural locations and the like, forestry fire hoses are commonly used in many countries in the world. These fire hoses consist in elongated fabric-covered flexible tubes suitable for conveying water from a water supply. This particular type of fire hoses must be lightweight and flexible enough so that they can be quickly and easily manoeuvred by fire fighters even over steep or rough terrains under difficult conditions.

However, due to the hose length needed for covering wide areas, fire hoses must be packaged, e.g. coiled, prior to their transportation to the scene of a fire. Transportation of the fire hoses can be carried through different methods known in the art.

One of the methods for carrying fire hoses is by forming bundles that are secured by means of hose straps. The bundle of hoses that is formed can be carried by one or more fire fighters for transportation. This method for carrying fire hoses is disclosed for example in US2008174133. In this document a hose pack system for transporting fire hoses is shown. This hose

pack system comprises a main elongated member and a plurality of transverse straps. The transverse straps can be connected to one another to secure the fire hose folded upon the main member.

This hose transportation method is not as efficient as desired since in some cases two people are usually required for transporting the hoses, especially when they are long. Even if a single fire fighter is capable of carrying the hose through this method, the bundle of hoses tend to hang in front of and behind the fireman due to the flexible nature of the hoses, therefore hindering movement and with the risk of slipping from the fire fighter's shoulder. In addition, the use of straps for securing the hoses is a time consuming operation both for deploying the hoses and for packing them again when tasks are finished.

Another known method of carrying hoses is through the use of bags. Backpacks, shoulder bags and similar bags, adapted for carrying hoses, are well known in the art. Hoses are first coiled and then fitted into the bag. The bag can be made, for example, of vinyl-coated nylon or like materials. One example of a backpack for carrying hoses is disclosed in US4858797. This backpack comprises a rigid back frame for carrying two hose coils. A first hose coil is arranged adjacent the back frame and a second fire hose is arranged next the first hose coil. Both the first and the second hose coils can be bound to the back frame by straps that are attached to the frame. The end portions of respective two straps that are fixed to the frame are passed through the corresponding central openings of the coiled hoses such that said end portions project out of the hose coils. The free ends of said end portions are releasably attached to corresponding end portions of straps fixed to the frame and overlying the upper periphery of the coiled hoses. Said end portions of the straps form a two-part selectively releasable attachment for releasably fastening the coils to the back frame. Pulling a cable causes said end portions of the straps to be released from each other. This, combined with a shrugging action of the wearer's shoulders in the direction in which it is desired that the coiled hose be deployed, causes the hose coil to be released from the backpack.

This solution has the disadvantage that the first hose coil, which lies adjacent the back frame, can not be released by the fire fighter until the second hose

coil has been released first and therefore no selective hose release is provided. In addition, hose coil loading and unloading operations could get complicated: the end portions of the straps passing through the respective central openings of the coiled hoses could become blocked preventing the hoses from being efficiently delivered.

SUMMARY

The foregoing disadvantages of the prior art solutions are efficiently overcome by the present carrying device for transporting objects as defined in claim 1.

The disclosed device solves the above mentioned disadvantages and provides a safe and efficient way of transporting objects, particularly elongated objects such as fire hoses, cables, ropes and the like. In this respect, reference will be made in the present disclosure to fire hoses or forest fire hoses as non-limiting examples of elongated objects for the sake of simplicity.

The present carrying device for transporting objects comprises carrying means for carrying at least one object. In a preferred application, and as stated above, the carrying means of the present device are suitable for carrying at least one fire hose and particularly a fire hose in a coiled condition. Other objects and their particular conditions are not ruled out within the meaning of the present disclosure.

The present carrying device further comprises release means, which may comprise, for example, a quick release device. The quick release device allows the object (e.g. a coiled fire hose) to be quickly and easily released. With the present device, the object can be therefore unloaded quickly from the respective carrying means. This is particularly significant in fire fighting applications in which the object is a fire hose that must be quickly delivered for a rapid water supply to the scene of a fire. For this purpose, the carrying means comprise at least one housing for receiving at least one of said objects. As used herein, a housing is understood as a case, enclosure or receptacle inside of which an object can be received.

The shape and size of the housings can be adapted for receiving fire hoses, particularly in a coiled condition, as stated above. For this particular application, it is preferred that the housings are cylindrical in shape. The size of the housing will be adapted for the dimensions of the objects to be transported.

The housing has at least one opening through which at least one object, such as a hose coil, can be loaded into or unloaded from the respective housing. However, in the preferred embodiment of the present device, the carrying means include at least two housings, for example four. In this particular embodiment, some or all of the housings may be different or some or all of them may be the same. In one exemplary embodiment in which the carrying means include four housings, they may be arranged in a first pair of housings located adjacent the wearer's back and a second pair of housings placed onto the first pair of housings.

In this embodiment of the present device in which the carrying means include two or more housings, for example four, the release means may be adapted to allow at least one object, such as a hose coil, to be selectively unloaded from any one of the housings, whichever they are and regardless its position in the device.

In particular embodiments of the present device, there may be one housing for a single object (e.g. hose coil) or there may be a single housing for a number of objects, or even combinations thereof. The housing or housings can be made of a rigid or semi rigid material capable of withstanding at least the weight of the object or objects received therein.

The provision of housings, consisting for example of receptacles made of a rigid or semi rigid material, renders the use of the carrying device easy and quick and loading and unloading operations are greatly facilitated regardless the number of housings. This, combined with the capability of selectively releasing hose coils from the housings, makes the present device very efficient, particularly in fire fighting applications in which fire hoses must be rapidly deployed and efficiently transported.

Retaining means may be further provided for preventing the object or objects

within the housing from passing through the opening, that is, from being unloaded from the housing, especially during transportation. These release means can be adapted to cooperate with the retaining means in the manner described below.

It is preferred that the opening is formed in the respective housing in a way that at least one object is allowed to be quickly and easily loaded and unloaded through one lateral portion of the housing. In this respect, it is preferred that the opening is formed in the housing such that the objects can be efficiently unloaded from the housing by gravity for rapid deployment. However, eject means may be provided if required for forcing at least one object at least partially out of the housing.

Although the device as disclosed can be carried by the user as is, in some embodiments of the present device there may be provided a supporting member. This supporting member may be made as a frame for supporting the housing or housings with the purpose of facilitating transportation and in order to provide a stronger device. In one example, this supporting member may comprise a substantially rigid element that can be generally fabricated from aluminium tubing or other lightweight material to provide a strong lightweight, and comfortable base for mounting the carrying means. The supporting member is suitably shaped to be placed on a user's back during use.

Additional objects, advantages and features of embodiments of the present device will become apparent to those skilled in the art upon examination of the description.

BRIEF DESCRIPTION OF THE DRAWINGS

Particular embodiments of the present device will be described in the following by way of a non-limiting example. This example is given with reference to the appended drawings, in which:

Figure 1 is a diagrammatic elevational view of one embodiment of a carrying device for transporting forest fire hoses in which the device is loaded with hoses and worn on a user's back;

Figure 2 is a perspective view of the embodiment of the carrying device of figure 1 in which the carrying means are shown loaded with respective hoses;

Figure 3 is a diagrammatic perspective view of the embodiment of the carrying device of figure 1 in the which supporting member is shown;

Figure 4 and 5 are perspective views of the carrying device as shown figure 2 in which a fire hose is out of the carrying means for showing two examples of loading, or unloading, the hoses into, or from the carrying device; and

Figure 6 is a perspective view of one embodiment of the quick release means both in closed and open conditions.

DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION

The figures of the drawings illustrate one exemplary embodiment of the present device for carrying fire hoses. The device shown in the figures has been designated as a whole at 100. Other applications to which this device 100 can be advantageous are not ruled out, such as transportation of cables, ropes and the like.

The present example shows a carrying device 100 that mainly comprises a supporting member 10, carrying means 20 and release means 30. However, it is to be noted that in alternative embodiments of this device the supporting member 10 could be omitted such that the carrying means 20 could be suspended directly to the wearer's back through suitable back and waist straps or a harness.

In the example shown, the supporting member 10 is intended to be suspended on the user's back 200 during use in the manner shown in figure 1. The supporting member 10 acts as a frame and it is preferably made of a substantially rigid material such as aluminium or other suitable lightweight material. The supporting member 10 can be provided, for example, with a harness for easy transportation as well as two lateral handles 11. The handles 11 are provided with a padding portion 12 for added comfort.

The carrying means 20 comprise a number of housings 25. In the example shown, the carrying device 100 is provided with four housings 25 all having a substantially cylindrical configuration. A first pair of housings 25 is coupled to the supporting member 10 of the carrying device 100. A second pair of housings 25 is coupled onto the first pair of housings 25. Coupling of the first pair of housings 25 and coupling of the second pair of housings 25 to each other and/or other parts of the device 100 can be performed by any suitable manner known in the art.

For particular applications of the present device 100, the carrying means 20 may be detachable such that a modular device 100 is obtained, that is, with housings 25 capable of being detached from each other. In this respect, in the embodiment in which the supporting member 10 is provided, such supporting member 10 is adapted to detachably receive the carrying means 20.

In other embodiments of the present device 100, some or all of the housings 25 could be made as a unitary part. Still in further embodiments, the first pair of housings 25 and the supporting member 10 of the carrying device 100 could be also made as a unitary part, that is, both being made of a single piece. In the particular embodiment shown in figure 3, the first pair of housings 25 and the supporting member 10 are coupled with each other through a pair of bands 29 extending longitudinally through the supporting member 10. The respective opposite ends of the bands 29 are attached to the corresponding bottom 28a of the first pair of housings 25. The two bands 29 are arranged parallel to each other and pass through grooves 29 formed in the supporting member 10.

As stated above, the housings 25 are each formed of a cylindrical body, although one or more could be different in shape depending to the requirements and the objects to be received therein. In the embodiment of the carrying means in which at least one of the housings 25 comprises a cylindrical body, the body comprises a bottom 28a located adjacent the supporting member 10, an end cover 28 opposite the bottom 28a, and a cylinder wall.

An opening 26 is formed on the cylinder wall of the cylindrical housings 25.

The opening 26 is suitably sized and shaped for facilitating loading and unloading operations of the fire hoses 300. In the particular exemplary embodiment shown in the figures, the openings 26 in the housings 25 are suitable for receiving a respective fire hose 300 in a coiled condition and for delivering it down by gravity as shown in figures 4 and 5 of the drawings. In a preferred situation, fire hoses 300 are delivered for deployment in such a coiled condition as depicted in the figures.

For a suitable loading and unloading operations of the fire hoses 300 through the corresponding openings 26 in the respective housings 25, said openings 26 are preferably located at one side of the housings 25 in their respective wall, as shown in the drawings. Location of the respective openings 26 allows fire hoses 300 to be easily unloaded from the corresponding housings 25 by gravity as stated above.

In the example shown, retaining means 27 are provided to keep the hoses 300 into the respective housings 25 and preventing them from being unloaded from said respective housings 25, especially when being transported. The retaining means 27 in the example shown comprise a strap 26a. Strap 26a is formed as an extension of the end cover 28 of the housing 25. When a fire hose 300 is inside a housing 25 and the retaining means 27 are in a working condition, for example, when the carrying device 100 is ready for use, that is, for transporting the fire hoses 300, as shown in figures 2 and 3 of the drawings, the strap 26a serves the purpose of closing or blocking the opening 26 of the housing 25 such that the hose 300 is not allowed to come out of the respective housings 25. Blocking of the opening 26 is achieved by passing the strap 26a onto one portion of the surface of the fire hose 300 overlying its upper periphery, as depicted in figure 4 of the drawings.

In the non-limiting example shown in the drawings, the end of the strap 26a of the retaining means 27 is provided with a male bucket member 29a. This male bucket member 29a is intended to be inserted into a female bucket member 29b for securing the strap 26a, as shown in the figure 6. The bucket member 29a is provided with an engaging portion 29a' intended for being inserted into a cavity 29b' formed within the female bucket member 29b as shown in the lower drawing of figure 6.

The female bucket member 29b is attached to, or is part of, the supporting member 10, although in other embodiments the female bucket member 29b may be attached to, or be part of, the carrying means 20. In the particular embodiment shown in the figure 3 of the drawings, the female bucket member 29b is attached to the supporting member 10 through an attaching portion 35 formed at the sides of the supporting member 10.

The above male bucket member 29a and female bucket member 29b are part of the release means 30. The embodiment of the release means 30 shown in detail in figure 6 are of the quick type. When the engaging portion 29a' of the male bucket member 29a of the strap 26a is inserted into the cavity 29b' of the female bucket member 29b, the male bucket member 29a is clamped such that the strap 26a blocks the opening 26 of the housing 25, i.e. the opening 26 is at least partially closed in a way that the fire hose 300 is prevented from being unloaded from the respective housings 25.

As shown in the figures, the release means 30 further comprises a pulling strap 32. The free end of the pulling strap 32 is provided with a ring 31. This ring is attached to, or otherwise formed integrally with, said free end of the pulling strap 32. The opposite end of the pulling strap 32 is attached to, or otherwise formed integrally with, the female bucket member 29b. For this purpose, the female bucket member 29b is also provided with a small attaching ring 36 for the attachment said end of the pulling strap 32.

When the pulling strap 32 is pulled by the user through the ring 31 in the direction shown by arrow A in the lower drawing of figure 6, the male bucket member 29a is rapidly released from the female bucket member 29b, that is the engaging protrusion 29a' of the male bucket member 29a rapidly leaves the cavity 29b' of the female bucket member 29b. This results in that the strap 26a is quickly released from the female bucket member 29b and can be then pulled in the direction shown by arrow B in the lower drawing of figure 6. The opening 26 of the housing 25 is then free or unblocked as shown in figures 4 and 5 in a way that the fire hose 300 received therein can be rapidly and efficiently delivered by gravity for being deployed. The release operation consisting in pulling the strap 32 in the direction shown by arrow B in the lower drawing of figure 6 through the ring 31 can be performed by the wearer of the present device 100 or by any other person.

In the embodiment shown in the drawings, each housing 25 of the carrying means 20 is provided with their own release means 30. In this way, each housing 25 can be opened (unblocked) or closed (blocked). When blocked, the respective fire hoses 300 received therein can not leave the corresponding housings 25. When unblocked, the respective fire hoses 300 can be released by gravity. In this way, the release means 30 are capable of allowing at least one fire hose 300 to be selectively released from the respective carrying means 20. This means that any housings 25 of the carrying means 20 can be unblocked so that fire hoses 300 can be selectively deployed. This is an important feature especially in cases where different hoses having different characteristics are received into different housings 25.

The fire hoses 300 in the present embodiment are preferably in a coiled condition. The coiled condition can be maintained when stored into the respective housings 25 as well as when delivered therefrom for deployment if necessary. However, other conditions for the hoses 300 in all such cases are not ruled out.

Although only a number of particular embodiments and examples of the present device have been disclosed herein, it will be understood by those skilled in the art that other alternative embodiments and/or applications and obvious modifications and equivalents thereof are possible. For example, the device 100 could be provided with eject means (not shown) for forcing the fire hoses 300 or any other object stored within the housings 25 at least partially out of the respective housings 25.

In addition, all the possible combinations of the particular embodiments of the device described above are included within the scope of the appended claims such that the scope of the present invention should not be limited by the particular embodiments disclosed herein, but should be determined only by a fair reading of the claims that follow.

Claims

1. A carrying device (100) for transporting objects (300), the carrying device (100) comprising:

- carrying means (20) for carrying at least one object (300), and
- release means (30) for releasing at least one object (300) from the respective carrying means (20),

characterized in that

the carrying means (20) comprise at least one housing (25) for receiving at least one object (300), wherein said housing (25) is provided with at least one opening (26) through which at least one object (300) can be passed for being loaded into, or unloaded from, the housing (25).

2. The device (100) of claim 1, wherein the carrying means (20) includes at least two housings (25).

3. The device (100) of claim 2, wherein the release means (30) are adapted to allow at least one object (300) to be selectively unloaded from any of the housings (25).

4. The device (100) of any of the preceding claims, wherein said housing (25) is adapted for receiving an elongated body (300) therein in a coiled condition.

5. The device (100) any of the preceding claims, wherein said housing (25) is a substantially cylindrical body.

6. The device (100) of any of the preceding claims, wherein it further includes retaining means (27) for preventing the object (300) that is loaded into the housing (25) from being unloaded through the opening (26).

7. The device (100) of claim 6, wherein the release means (30) are adapted to cooperate with the retaining means (27).

8. The device (100) of any of the preceding claims, wherein the opening (26)

is formed in a lateral portion of the respective housing (25).

9. Device (100) as claimed in any of the preceding claims, wherein it further comprises a supporting member (10) comprising a substantially rigid element intended to be placed on an user's back (200) and suitable for receiving said carrying means (20).

10. Device (100) as claimed in any of the preceding claims, wherein the release means (30) comprise a quick release device (29a, 29b).

11. Device (100) as claimed in any of the preceding claims, wherein the opening (26) of the housing (30) is formed such that the object (300) received into the housing (30) can be unloaded therefrom by gravity.

12. Device (100) as claimed in any of the preceding claims, wherein it further includes eject means for forcing at least one object (300) at least partially out of the housing (25).

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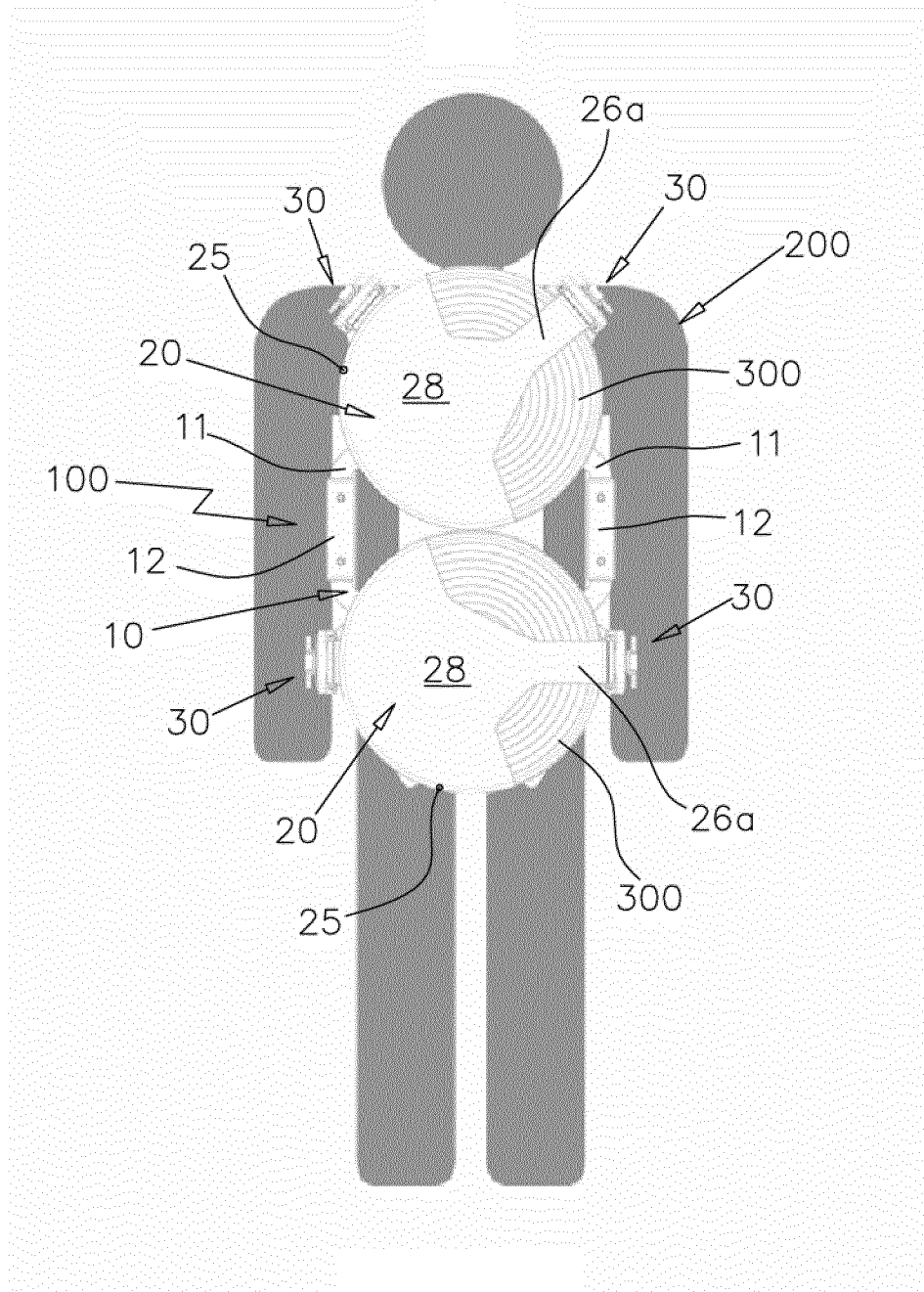


FIG.1

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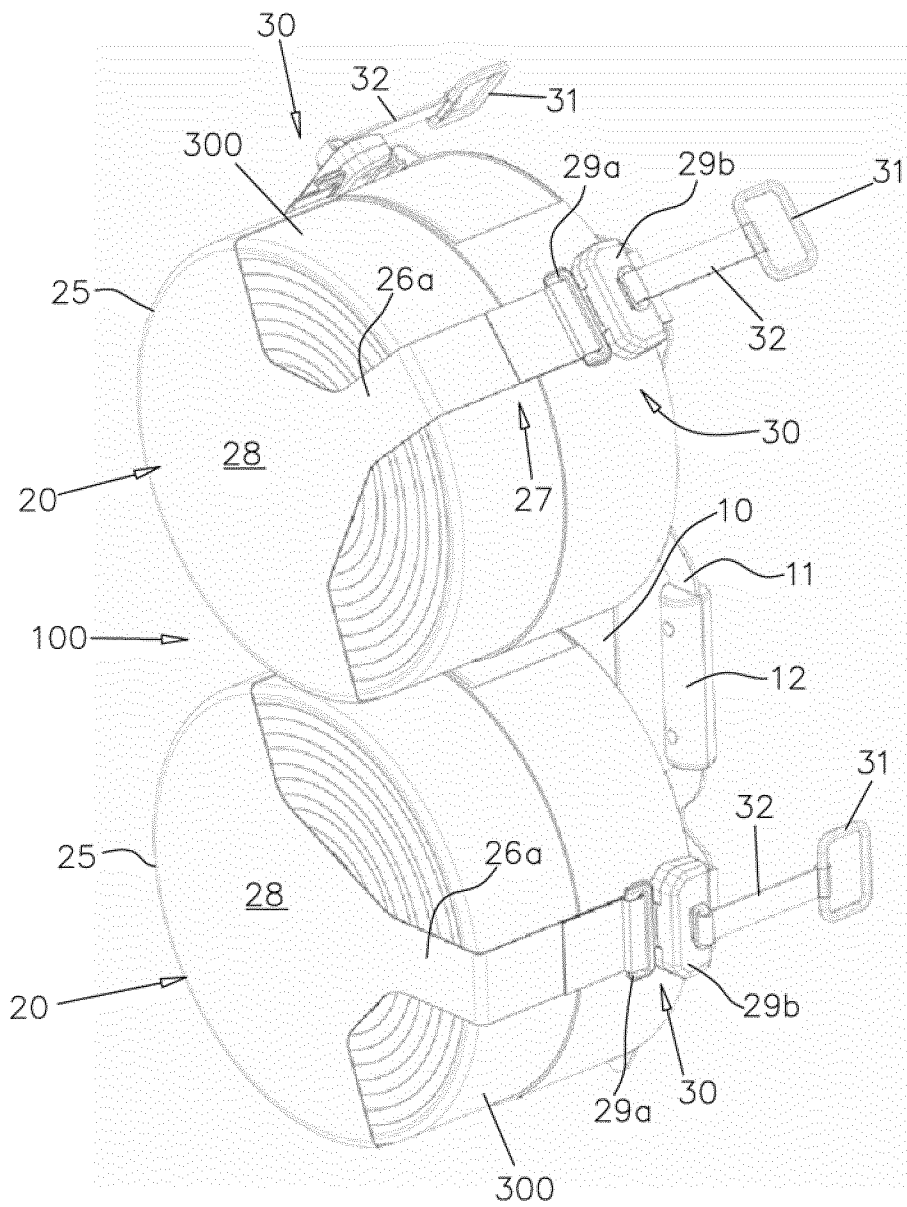


FIG. 2

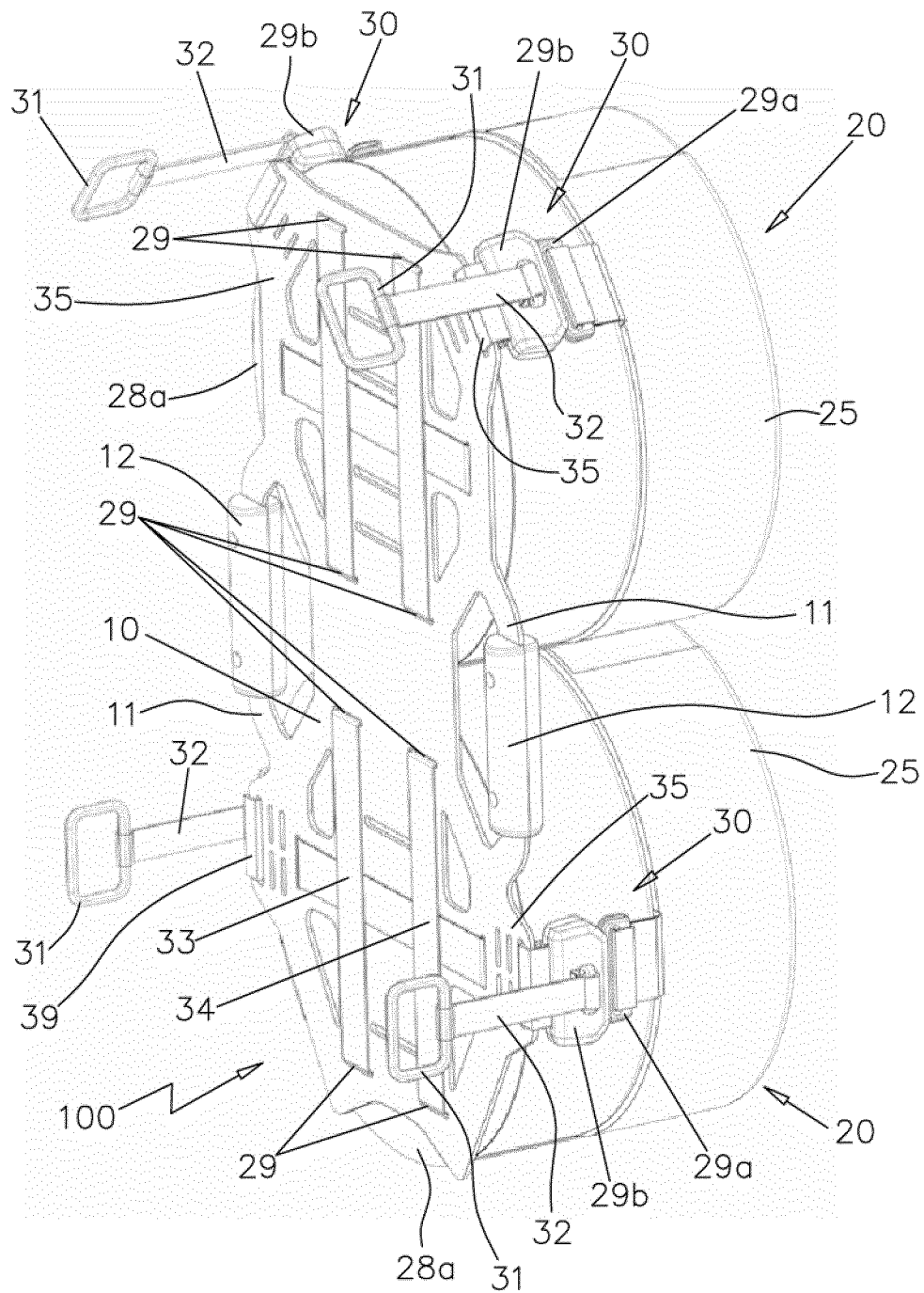


FIG. 3

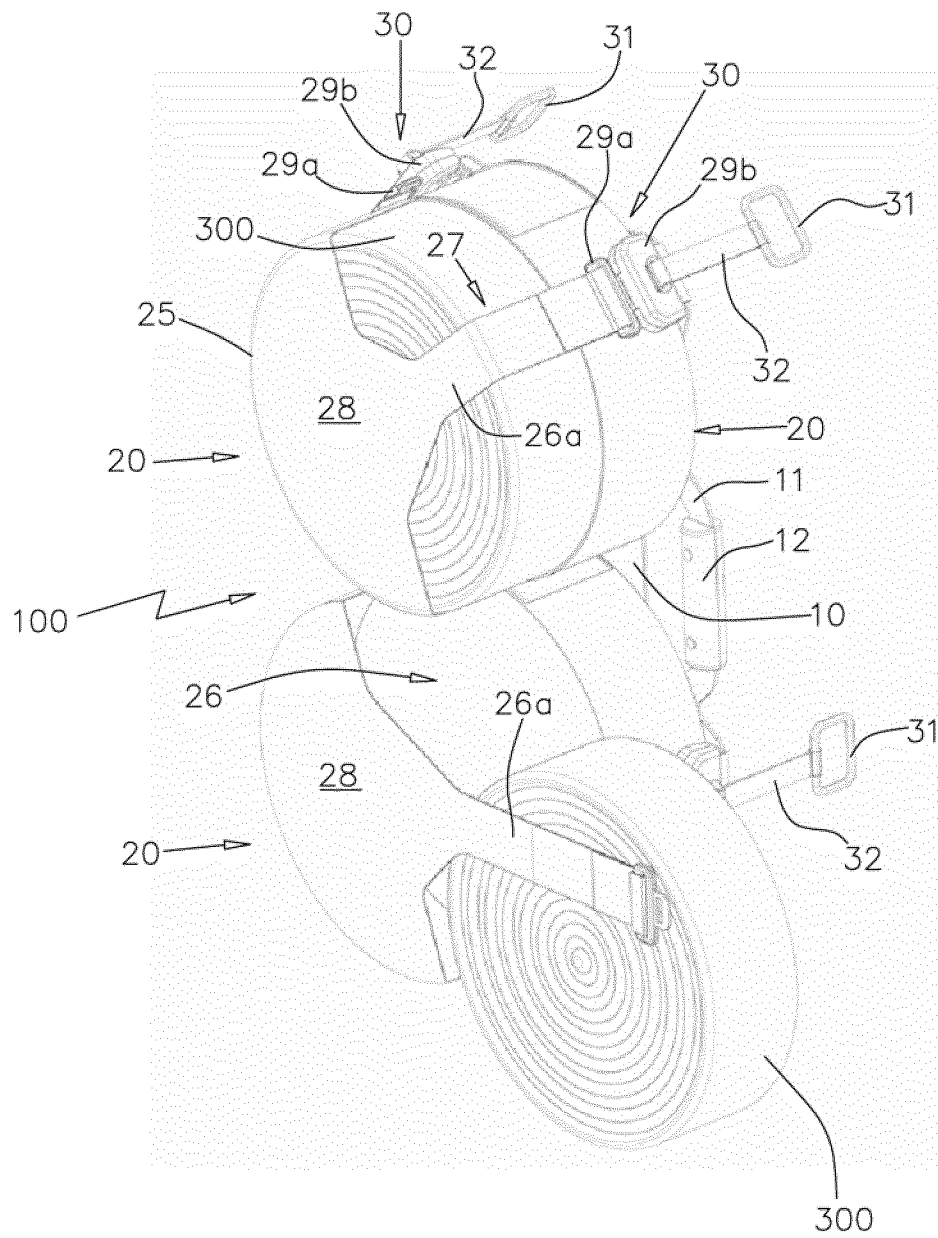


FIG. 4

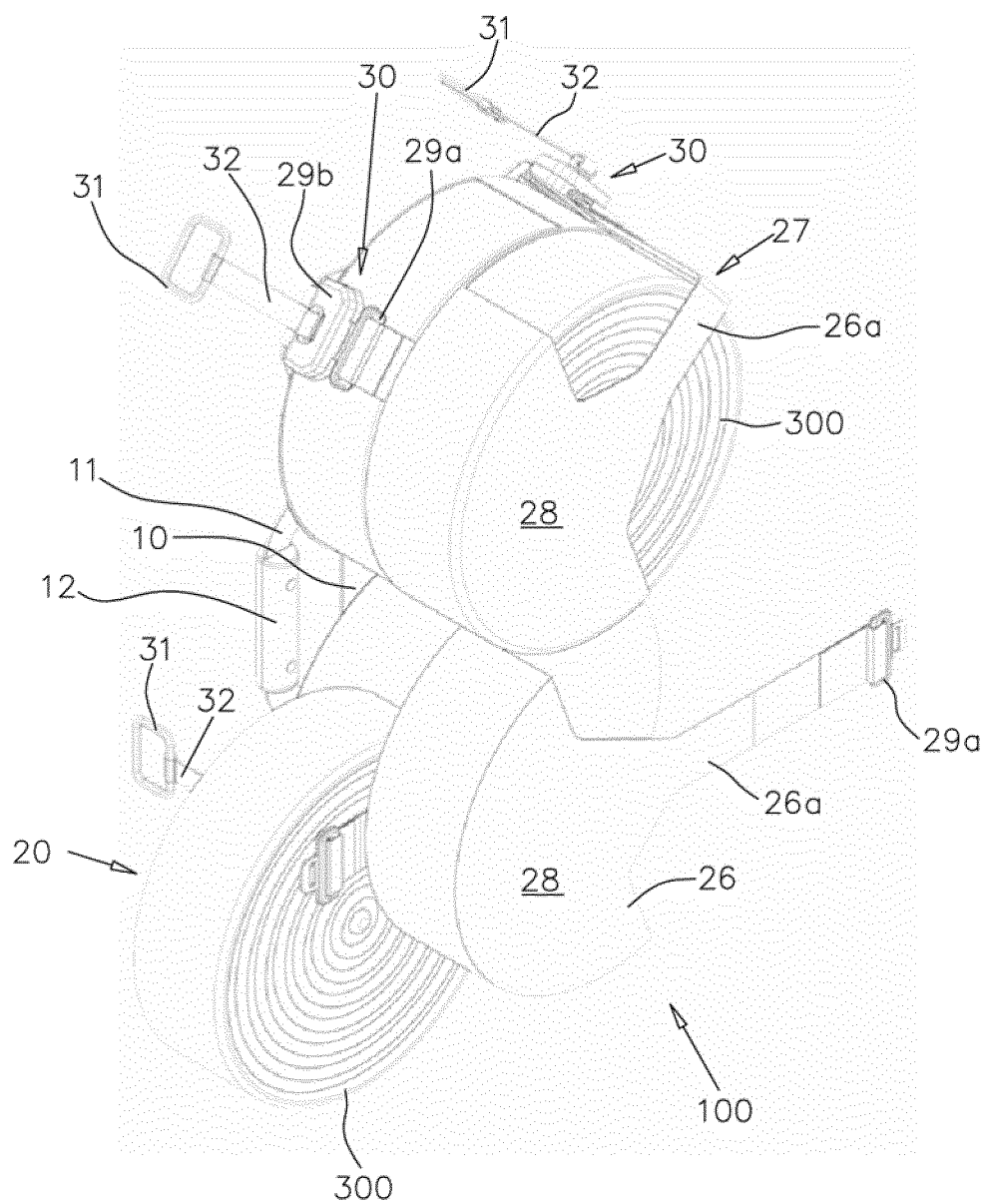


FIG. 5

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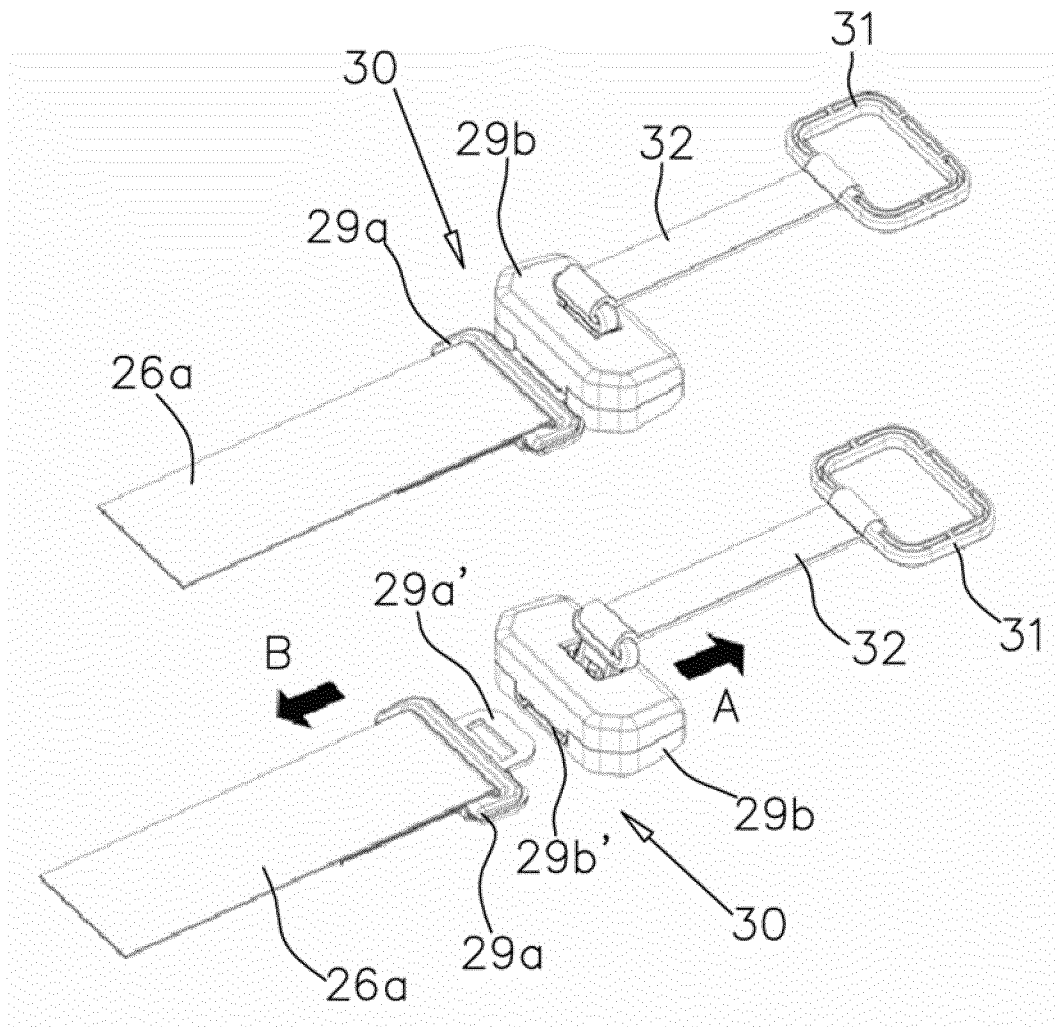


FIG. 6