



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
12.08.2015 Bulletin 2015/33

(51) Int Cl.:
A45C 11/26 (2006.01) B65D 85/00 (2006.01)

(21) Application number: **14154365.2**

(22) Date of filing: **07.02.2014**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

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(54) **Snow chain casing**

(57) A snow chain casing (1) is disclosed which comprises at least one elongate compartment (2) for accommodating a single snow chain (3), the snow chain (3) comprising a flexible elongate element (4) which can be formed to a ring and at which anti-skid elements (5) are attached so as to extend from the flexible elongate element (4), the at least one elongate compartment (2) comprising an opening (6) in an end region thereof dimen-

sioned for inserting the snow chain (3), wherein the cross sectional dimension of the elongate compartment (2) is determined under consideration of the stiffness of the flexible elongate element (4) of the snow chain (3) to be accommodated in the elongate compartment (2) in order to restrict a longitudinally collapsing of the flexible elongate element (4) when accommodated in the elongate compartment (2).

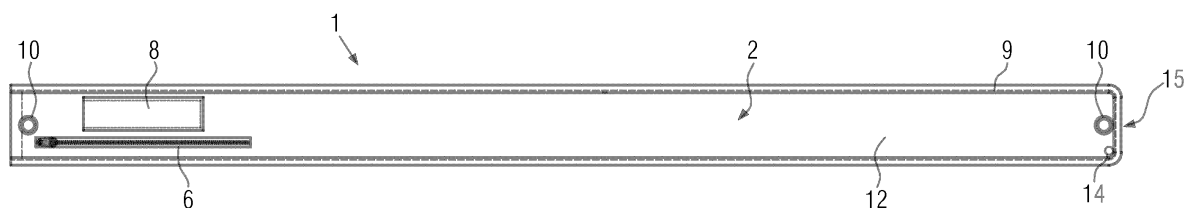


FIG. 1a

Description

BACKGROUND OF THE INVENTION

[0001] The present subject matter relates to a snow chain casing for accommodating at least one snow chain.

[0002] Snow chains widely used nowadays comprise at least one flexible cable as a lateral element to be formed into a closed ring on the inner side of the wheel. Anti-skid elements extend from the flexible cable and can be placed over the tread of the wheel when the ends of the flexible cable are connected to each other to form the ring on the inner side of the wheel. After having placed the anti-skid elements on the tread of the wheel, a further lateral element such as chains, flexible cables, steel wires, ropes or the like have to be used to form a closed ring on the outer side of the wheel in order to fix the snow chain on the wheel. Usually, a tensioner is used for tensioning the elements on the outer side of the wheel. As anti-skid elements, chains are widely used. Furthermore, the flexible cables commonly used to form the ring on the inner side of the wheel comprise a specific stiffness and tend to extend in the longitudinal direction.

[0003] Usually, in order to store such snow chains after use, conventional soft or hard shell plastic casings or packagings are used. Such casings are typically designed to enable the accommodation of the snow chain with the flexible cable being wrapped up. That is, in case a user intends to store the snow chains in the commonly used casings, the flexible cables or steel wires have to be wrapped up in order to fit into the casings. As already mentioned above, anti-skid elements widely used are chains. Thus, when the flexible cable or steel wire is wrapped up for storage, the chains connected thereto often get tangled during storage. This has the drawback that a user, intending to mount the snow chains on the wheels has to disentangle the chains first after having taken the chains out of the casing. Disentangling the chains is however time consuming and very annoying for the user. Furthermore, present day casings are usually very bulky and do not provide for flexible storage of the snow chains.

SUMMARY

[0004] The present subject matter relates to a snow chain casing for accommodating at least one snow chain.

[0005] According to a first aspect of the present subject matter, a snow chain casing comprises at least one elongate, preferably tubular, compartment for accommodating a single snow chain. Such an elongate compartment is characterized in that the length of the elongate compartment is greater than the other dimensions of that compartment.

[0006] The snow chain to be accommodated in the elongate compartment comprises a flexible elongate element which can be formed to a ring and at which anti-

skid elements are attached so as to extend from the flexible elongate element. For instance, such anti-skid elements can be chains or any other suitable means for increasing the friction on the tread of the wheel allowing a good grip by the tires of the vehicle.

[0007] Further, the at least one elongate compartment comprises an opening in an end region thereof dimensioned for inserting the snow chain. The opening can have any suitable shape enabling the accommodation of the snow chain in the elongate compartment. Thus, the opening is dimensioned in such a way that a user is able to insert the snow chain into the elongate compartment. Preferably, the opening is dimensioned in such a way that the snow chain is insertable by inserting an end of the flexible elongate element in said opening and subsequently moving the flexible elongate element together with the anti-skid elements into the elongate compartment through the opening.

[0008] Advantageously, the opening is dimensioned under consideration of the dimension of the flexible elongate element as well as the form and dimension of the anti-skid elements connected to the flexible elongate element. Preferably, the opening is dimensioned such that the snow chain can be smoothly inserted into the elongate compartment. In this connection, it is advantageous if the opening is dimensioned such that the anti-skid elements cannot get caught at the opening when the snow chain is inserted in the elongate compartment.

[0009] Advantageously, the cross sectional dimension of the elongate compartment is determined under consideration of the stiffness of the flexible elongate element of the snow chain to be accommodated in the elongate compartment in order to restrict a longitudinal collapsing of the flexible elongate element when accommodated in the elongate compartment. Here, longitudinal collapsing means that the flexible elongate element cannot be sufficiently supported by the inner periphery of the elongate compartment and, therefore, can slide along the inner periphery at a contact portion so that a portion of the flexible elongate element passes another portion of the flexible elongate element in the longitudinal direction of the elongate compartment.

[0010] The cross sectional dimension can be defined by several characteristics depending on the form and the material of the elongate compartment including the diameter, the width, the perimeter, and other characteristics of the elongate compartment.

[0011] Advantageously, these characteristics are adjusted under consideration of the stiffness of the flexible elongate element of the snow chain in order to prevent a longitudinal collapsing of the flexible elongate element when accommodated in the elongate compartment. In order to restrict a longitudinal collapsing of the flexible elongate element, it is advantageous if the cross sectional dimension is determined such that an excessive bending of the flexible elongate element is prevented by a contact of the same with the inner periphery of the elongate compartment.

[0012] The bending properties of the flexible elongate member depend on its stiffness. That is, in case the stiffness of the flexible elongate element is high, bending of the same is more difficult and a bending radius occurring is high. On the other hand, in case the stiffness of the flexible elongate element is low, the bending of such an element is much easier and a small bending radius can occur. Consequently, in order to restrict a longitudinal collapsing of the flexible elongate element which takes place when said flexible elongate element is allowed to excessively bend, a cross sectional dimension can be provided in which the bending of the flexible elongate element is restricted by a contact between the flexible elongate element and an inner side of the elongate compartment.

[0013] For instance, it is preferable to choose the cross sectional dimension of the elongate compartment to be smaller in case the stiffness of the flexible elongate element is low whereas a greater cross sectional dimension of the elongate compartment can be provided in case the stiffness of the flexible elongate element is high. This has the advantage that the elongate compartment is formed such that a certain longitudinal extension of the flexible elongate element is maintained in any case. By this, it is possible to keep the anti-skid elements apart from each other during storage so that tangling of the same is avoided.

[0014] According to a further embodiment of the present subject matter, the cross sectional dimension of the elongate compartment is determined such that the flexible elongate element is pushable into the elongate compartment. In other words, the cross sectional dimension of the elongate compartment is determined taking into account the manner in which the snow chain with the flexible elongate element is inserted into the elongate compartment.

[0015] When pushing the flexible elongate element into the elongate compartment, it is possible that the flexible elongate element gets caught in the elongate compartment due to a contact of the leading end of the flexible elongate element and an inner wall of the elongate compartment. In such a case, pushing the flexible elongate element further into the elongate compartment can lead to a meandering form of the flexible elongate element in which the bent portions of the flexible elongate elements exert a higher force on the inner periphery of the elongate compartment. This can lead to a deformation of the elongate compartment and enlarge the space in the elongate compartment in such a manner that the flexible elongate element collapses in the longitudinal direction. Thus, the maximum achievable space in the elongate compartment can be limited in order to prevent that the flexible elongate element collapses.

[0016] According to an embodiment of the present subject matter, the cross sectional dimension of the elongate compartment is determined such that the flexible elongate element is insertable into the elongate compartment by gravitational force.

[0017] Inserting by gravitational force means that the gravitational force assists the inserting operation of the snow chain by a user when the snow chain is inserted in the elongate compartment. Preferably, in order to use the gravitational force to a great extent, the flexible elongate element of the snow chain is inserted in the elongate compartment in a vertical direction. The gravitational force will then act on the flexible elongate element as well as on the anti-skid elements coupled thereto so that the flexible elongate element is extended in the longitudinal direction.

[0018] Thus, when inserting the snow chain in the flexible elongate element in a vertical direction, the friction between the leading end of the flexible elongate element and the inner periphery of the elongate compartment is much lower compared to the case where the flexible elongate element is pushed into the elongate compartment in the vertical direction and the leading portion of the flexible elongate element slides on the inner periphery of the elongate compartment, for instance. Thus, the flexible elongate element is less inclined to get caught in the elongate compartment during the insertion operation. Hence, the cross sectional dimension of the elongate compartment can be determined such that its form allows the flexible elongate element to bend to a greater extent compared to the case where the flexible elongate element is pushed into the elongate compartment.

[0019] Accordingly, adapting the cross sectional dimension of the elongate compartment to the insertion operation of the flexible elongate element assisted by gravitational force leads to a construction of the elongate compartment in which the cross sectional dimension can be chosen to be wider and the length of the overall snow chain casing can be reduced.

[0020] According to an embodiment of the present subject matter, the longitudinal movement of the flexible elongate element is restricted by contact of its tip portion with the end portion of the snow chain casing. Thus, during insertion or after the snow chain has been fully inserted in the elongate compartment, the flexible elongate element can get in contact with the end portion of the snow chain casing at its tip portion. With the tip portion being blocked the pushing force applied on the flexible elongate element during insertion or the weight of the snow chain will act on the tip portion leading to a bending of the flexible elongate element. In other words, in case a further longitudinal movement of the tip portion of the flexible elongate element is not possible, the flexible elongate element has to deviate in a direction substantially perpendicular to the longitudinal direction leading to a meandering profile of the flexible elongate element when it is fully accommodated in the elongate compartment.

[0021] Preferably, the cross sectional dimension of the elongate compartment is chosen such that the maximum deflection of the flexible elongate element occurs when said snow chain casing is brought into the vertical position so that the flexible elongate element is bent due to its own weight and the weight of the anti-skid elements con-

nected to the flexible elongate element.

[0022] According to an embodiment of the present subject matter, the cross sectional dimension of the elongate compartment is determined such that the flexible elongate element is accommodated in the elongate compartment in a meandering way and contacts the inner peripheral surface of the elongate compartment at at least two contact points. Accordingly, when the flexible elongate element is accommodated in the elongate compartment, the flexible elongate element follows a winding path or course in which it alternately bends in opposite directions and, therefore, gets into contact with the inner peripheral surface of the elongate compartment at different points. The outer sides of the bent portions of the flexible elongate element thereby contact the inner peripheral surface of the elongate compartment at at least two contact points. That is, the flexible elongate element can be bent in at least two opposite directions and thereby at least forms an S-like shape. In this connection, two consecutive contact points on the flexible elongate element can contact the inner peripheral surface of the elongate compartment at substantially opposite sides.

[0023] According to another embodiment of the present subject matter, the cross sectional dimension of the compartment is dimensioned such that when a plane is spanned crossing the elongate compartment substantially perpendicular to its longitudinal axis at any point in the longitudinal direction at which the flexible elongate element is present, that plane intersects with the flexible elongate element at one position only.

[0024] Accordingly, the flexible elongate element can preferably not take a shape in which two points of the flexible elongate element are arranged on the same level in the longitudinal direction of the elongate compartment. Dimensioning the elongate compartment in such a way has the advantage that the flexible elongate element cannot form a loop. Since it is thus prevented that a portion of the flexible elongate element passes another portion of the flexible elongate element in the longitudinal direction of the elongate compartment, collapsing of the flexible elongate element is reliably prevented. Consequently, it is possible to store the snow chain casing containing the snow chain vertically and even under such a posture of the snow chain casing the flexible elongate element does not collapse in the longitudinal direction of the elongate compartment. Thus, it is reliably prevented that the anti-skid elements, preferably chains, get tangled because the contact between the same is prevented to a great extent.

[0025] According to a further embodiment of the present subject matter, the opening is a slit which is aligned with or is provided cross to the longitudinal direction of the elongate compartment. Using a slit as the opening, that is a very narrow opening, has the advantage that the snow chain can be inserted smoothly on the one hand but is prevented from sliding out of the elongate compartment on its own, since a narrow opening at least lowers the possibility that an end portion of

the snow chain enters the opening unintentionally. Furthermore, such a slit can be easily formed as well.

[0026] Such a slit can be aligned with the longitudinal direction of the elongate compartment. Preferably, the slit has a length which is a fraction of the length of the elongate compartment. The use of such slit provides an easy insertion of the flexible elongate element. In an advantageous construction when using a flexible material for the snow chain casing, an elastic member can be provided in the edge of the slit. By use of such an elastic member, it is possible to pre-tension the slit in such a way to provide a self-closing action. Consequently, without any interaction of the user, the slit will remain substantially closed. Such a construction has the advantage that the snow chain is securely accommodated in the elongate compartment and cannot slide out on its own. In a preferable alternative, the slit is provided cross to the longitudinal direction of the elongate compartment.

[0027] Using a slit which is provided cross to the longitudinal direction of the elongate compartment provides a smaller but also suitable opening for inserting the snow chain. Particularly in combination with a snow chain casing being made of a flexible material, arranging the slit cross to the longitudinal direction of the elongate compartment has the advantage that the slit has a self-closing function. This is due to the fact that, as already described above, the flexible elongate element of the snow chain takes a meandering form when accommodated in the elongate compartment with the outer periphery of the bent portions of the flexible elongate element being in contact with and pushing against the inner peripheral surface of the elongate compartment tensioning the snow chain casing in a direction substantially perpendicular to the longitudinal direction of the elongate compartment. This can lead to a tensioning of the end portions of the slit in opposite directions. Consequently, tensioning the snow chain casing in a direction substantially perpendicular to the longitudinal direction can assist a closing action of the slit shaped opening. Consequently, a reliable accommodation of the snow chain in a snow chain casing is possible.

[0028] Preferably, the slit is provided at a predetermined distance from the end of the snow chain casing such that a portion of the elongate compartment is formed between the opening and the end of the snow chain casing. In case the elongate compartment is limited by seams or welds, the predetermined distance is determined taking into account that in a portion of the snow chain between its end and the seam or weld, no compartment is formed. Therefore, the predetermined distance is determined so that a portion of the elongate compartment is present between the opening and the end of the snow chain casing. By this, a portion of the flexible elongate element can be accommodated in the portion of the elongate compartment formed between the opening and the end of the snow chain casing. With such a construction, an end portion of the flexible elongate element can pass the slit and enter the portion of the elongate

gate compartment formed between the opening and the end of the snow chain casing in case the snow chain slides in the snow chain casing. Consequently, compared to a construction in which the slit is formed extending from an end of the snow chain casing, a tip portion of the flexible elongate element is far less inclined to enter the opening on its own.

[0029] According to an embodiment of the present subject matter, the snow chain casing further comprises a flap for closing the opening. The flap can be formed in the end region of the snow chain casing in such a way that a folding of the snow chain casing uncovers the opening and enables the snow chain to be accommodated in the elongate compartment. Accordingly, the flap can be formed in such a way that the edges of the opening overlap each other in case the flap is unfolded. According to an advantageous construction, the flap can be realized by a piece of fabric which is foldable to close the opening. Thus, the flap covers the opening so that it is possible to provide the opening at the end of the snow chain casing. Depending on the construction, the flap can be folded backwards over the short edge of the snow chain casing in order to render the opening accessible. Using such a flap has the advantage that a closable opening can be manufactured in a cheap manner.

[0030] According to a further advantageous embodiment of the present subject matter, the snow chain casing further comprises a zipper for closing the opening. According to this alternative construction, a secure accommodation of the snow chain is provided. The opening direction of the zipper can be either direction following the slit. For instance, in case the slit is provided in the longitudinal direction of the elongate compartment, the zipper can be arranged so that its slider is moved away from the end portion of the snow chain casing or is moved towards the end portion of the snow chain casing for opening. Arranging the slider such that it is moved away from the end portion for opening the zipper has the advantage that the slider is positioned on the end of the slit at which the flexible elongate element or the anti-skid elements of the snow chain can contact the same. Thus, the slider of the zipper gets in contact with parts of the snow chain during the insertion operation and prevents the end elements of the zipper or slit from contacting the elements of the snow chain. Consequently, such a construction has a protective function in that galling or abrasion of an end portion of the opening or zipper is prevented.

[0031] According to an embodiment of the present subject matter, the length of the at least one elongate compartment is longer than the length of the elongate flexible member of the snow chain to be accommodated therein when the flexible elongate member is fully longitudinally extended. Such a length of the elongate compartment allows an easy insertion of the snow chain into the elongate compartment.

[0032] According to an embodiment of the present subject matter, each elongate compartment is formed by two

layers, preferably two clothes, being sewn or sealed together at their edges. The layers or clothes can have identical dimensions or can have a different width. By using two clothes or layers having identical dimensions, the snow chain casing is substantially flat when it is empty. On the contrary, it is also possible to use two layers with different widths. The layers or clothes can be sealed together by bonding for instance. By this, the snow chain casing is easy to manufacture at low costs.

[0033] According to an embodiment of the present subject matter, the snow chain casing comprises two elongate compartments separated by means of a web portion and are preferably formed by two flexible side layers and an internal layer between the two side layers, the internal layer preferably forming the web portion. Accordingly, the snow chain casing has two elongate compartments and is able to accommodate two snow chains. The internal layer can have a width which is smaller than the widths of the two flexible side layers. Furthermore, the internal layer can have a higher stiffness than the two flexible side layers. Moreover, the material used for the internal layer can be different to the material used for the flexible side layers.

[0034] According to an embodiment of the present subject matter, at least one draining hole is formed in each of the at least one elongate compartment, preferably centrally and/or at one or both ends of each compartment. The at least one draining hole can be provided for draining water out of the elongate compartment. Thus, the drying of the snow chains is enhanced and rusting of the snow chains is reduced. The at least one draining hole is preferably positioned such that substantially no water can accumulate in the elongate compartment. In this connection, the elongate compartment can be formed taking the draining of water into consideration. For example, the elongate compartments can be formed in such a way that its cross section is gradually reduced towards the end region such that the elongate compartment has a funnel-like shape which assists in guiding the water towards the draining hole. In an advantageous modification, multiple draining holes can be provided which are evenly spread over the length of the elongate compartment.

[0035] According to a further aspect of the present invention, a snow chain casing comprises at least one elongate compartment for accommodating a single snow chain, the at least one elongate compartment comprises an opening at an end region thereof dimensioned for inserting the snow chain. The length of the snow chain casing can be several times of the width of the same. Furthermore, the openings can have the form of a slit which is aligned in the longitudinal direction of the snow chain casing or which is provided cross to the longitudinal direction of the snow chain casing. Preferably, the length of the openings is only a fraction of the length of the snow chain casing, preferably less than half of the length of the snow chain casing and most preferably less than one fourth of the length of the snow chain casing. The at least one elongate compartment can be formed by two layers

of a flexible material wherein the two layers can have identical dimensions or a different width. The two layers can be sewn or sealed together at their edges. The snow chain casing can comprise a flap for closing the opening. Furthermore, a zipper may be provided in order to close the opening.

[0036] According to a further aspect of the present invention, an anti-skid system is disclosed comprising the snow chain casing according to one of the proceeding claims and a snow chain comprising a flexible elongate element and anti-skid elements coupled thereto, which snow chain is accommodated in a compartment of the snow chain casing.

[0037] The snow chain casing can be made of a flexible material, preferably fabric, rubber or soft plastic. Furthermore, it is advantageous if the material of the snow chain casing is waterproof. When using a flexible material for the snow chain casing it is possible to roll up the same with the snow chains contained therein. Thus, the snow chain casing with the snow chains can be stored in the spare wheel compartment, for instance. In this connection, the snow chain casing preferably comprises a length in the range of the wheel circumference.

[0038] The snow chain casing can comprise reinforced holes at at least one of its ends for storing the snow chain casing vertically by hanging the same on a hook. The holes can be reinforced by a metal or plastic ring.

BRIEF DESCRIPTION OF THE DRAWINGS

[0039]

- Figures 1a shows a side view of a snow chain casing according to an embodiment of the present subject matter;
- Figure 1b shows an enlarged view of an end portion of the snow chain casing shown in Figure 1a;
- Figure 2 shows a snow chain; Figure 3 shows a sectional view taken in the longitudinal direction of the elongate compartment;
- Figure 4 shows a snow chain casing with the snow chain partially inserted therein
- Figure 5 a cross sectional view of the snow chain casing shown in Figure 1a.

DESCRIPTION OF THE EMBODIMENT

[0040] In the following an embodiment of the present subject matter is explained based on the drawings. It is noticed that the drawings show a specific embodiment as explained below and further alternative modifications as specified in the description are at least in part not illustrated. Further, same reference signs used in the Fig-

ures denote same components.

EMBODIMENT

[0041] As shown in Figure 1a, the snow chain casing 1 comprises an elongate main body. The main body mainly consists of three clothes sewn to each other. In the side view of Figure 1, only a first side cloth 12 is shown. As is further shown in Figure 1a, a seam 9 is provided along the edge of the snow chain casing 1 thereby forming an elongate compartment 2 in said casing which is suitable for accommodating a snow chain 3. Reinforced holes 10 are provided on both longitudinal ends of the snow chain casing 1 allowing to hang up the snow chain casing 1 for storage. The snow chain casing 1 comprises a draining hole 14 at an end portion 15 thereof for draining water out of the inside of the elongate compartment 2. Hanging up the snow chain casing 1 at a reinforced hole 10 so that the draining hole 14 is located at a vertically lower position allows convenient drying of the snow chain 3 after use wherein the draining hole 14 assists the drying process by enabling the water to easily leave the snow chain casing 1. Furthermore, a longitudinally extending opening 6 is provided at one end of the snow chain casing 1, which is the left end in Figure 1a.

[0042] As shown in Figure 1b, a zipper 7 is provided at the opening 6 to close the same. As is also shown in this figure, the opening 6 is provided at a predetermined distance d from an end of the snow chain casing 1, for example the left end of the snow chain casing 1 as shown in Figures 1a and 1b. By this, the elongate compartment is also formed between the end of the opening 6 and the seam limiting the elongate compartment 2 at the longitudinal case of the snow chain casing 1, that is, the left side in Figure 1a and Figure 1b according to this embodiment.

[0043] As is also shown in Figures 1a and 1b, a plastic pocket 8 is sewn onto the first side cloth 12 near the opening 6. The plastic pocket 8 is sewn to the first side cloth 12 at three sides only and can be made of a transparent plastic or a soft net, for instance. Therefore, the plastic pocket 8 is suitable to accommodate a label giving information about the product contained in the snow chain casing 1.

[0044] The elongate compartment 2 of the snow chain casing 1 has a width w. This width is determined under consideration of the snow chain to be accommodated in the elongate compartment 2 and is taken as an example of a dimension of the cross sectional dimension of the elongate compartment 2. The relation between the width of the elongate compartment 2 and the snow chain to be accommodated therein is described later in greater detail.

[0045] Figure 2 shows a snow chain 3 to be accommodated in the elongate compartment 2 of the snow chain casing 1. The elongate compartment 2 is constructed taking the configuration of the snow chain 3 into account. The snow chain 3 comprises a flexible elongate

element 4 and chains 5 extending from and fixed to the flexible elongate element 4. The flexible elongate element 4 according to the present embodiment is a steel cable comprising a certain stiffness.

[0046] Figure 3 shows a sectional view of the snow chain casing 1 taken in the longitudinal direction of the elongate compartment 2 and showing the inside of the elongate compartment 2 as if a first side wall 12 of the snow chain casing was removed. As is also shown in this figure, the snow chain 3 is accommodated in the elongate compartment 2 and is indicated by its flexible elongate element 4 only. In order to accommodate the snow chain 3 in the elongate compartment 2 of the snow chain casing 1, the snow chain 3 has been pushed into the elongate compartment 2 through the opening 6. In this connection, Figure 4 shows an intermediate position of the snow chain 3 during the insertion action, that is a state, in which the trailing end of the flexible elongate element 4 is still positioned outside the elongate compartment 2 whereas the leading end of the flexible elongate element is already positioned and moved inside the elongate compartment 2.

[0047] In order to finally accommodate the snow chain 3 in the elongate compartment 2, the remaining portion of the flexible elongate element 4 as well as the chains 5 fixed thereto have to be pushed into the elongate compartment 2 through the opening 6. The movement of the leading end of the flexible elongate element 4 is restricted by the longitudinal end of the elongate compartment 2 that is the right end as shown in Figure 3, so that the leading end of the flexible elongate element 4 gets in contact with the longitudinal end of the elongate compartment 2. As soon as such a contact is established, the flexible elongate element 4 will take a meandering form when it is moved still further into the elongate compartment 2.

[0048] Likewise, in case the snow chain casing 1 is positioned vertically, the flexible elongate element 4 will move downward as far as possible and as soon as the leading end of the flexible elongate element 4 gets in contact with the lowermost portion of the elongate compartment 2, the flexible elongate element 4 will be forced in the meandering form due to its own weight and the weight of the chains fixed thereto further dragging the trailing end of the flexible elongate element towards the leading end. As a consequence, the flexible elongate element 4 spreads the elongate compartment 2 from the inside. In this connection, it is to be mentioned that the width as mentioned before is considered to be the maximum possible distance in the elongate compartment 2 due to the spreading of the elongate compartment 2 by the flexible elongate element 4 as described.

[0049] A cross section through the snow chain casing 1 taken in a direction perpendicular to the longitudinal axis of the snow chain casing is shown in Figure 5. The snow chain casing 1 according to the embodiment is formed by three clothes, that is two side clothes 12 and 13 and an internal cloth 11. The first side cloth 12 and

the second side cloth 13 are sewn together at their edges with the internal cloth 11 being sandwiched between them. That is, the three clothes are sewn together at their edges. As is further obvious from Figure 5, the internal cloth 11 has a smaller width than the width of the first side cloth 12 and the second side cloth 13. Due to this difference in the dimension, a construction is achieved in which the side clothes 12 and 13 do not completely abut on the internal cloth 11 over the entire width. In other words, two compartments 2 are formed between the first side cloth 12 and the second side cloth 13 and the internal cloth 11, respectively, even if the internal cloth 11 is tensioned.

[0050] Thus, an enhanced snow chain casing 1 is provided.

MODIFICATIONS

[0051] The snow chain casing can be made of a flexible material, preferably fabric, rubber or soft plastic. Furthermore, it is advantageous if the material of the snow chain casing is waterproof.

[0052] The snow chain casing can comprise reinforced holes, preferably reinforced by means of a metal or plastic ring, at at least one of its ends for storing the snow chain casing vertically by hanging the same on a hook.

[0053] While according to the embodiment, the snow chain casing comprises a draining hole at one end portion thereof for draining water out of the inside of the elongate compartment, it is also possible to provide multiple draining holes in each elongate compartment. For instance, it is possible to provide an additional draining hole centrally and/or an additional draining hole at the other end portion of the elongate compartment.

[0054] According to the embodiment, the flexible elongate element 4 will take a meandering form when it is moved still further into the elongate compartment 2. This is the case because the flexible elongate element is longer than the elongate compartment 2. However, it is also possible to use a snow chain casing with an elongate compartment which is longer than the length of the flexible elongate element 4. In this case, the flexible elongate element will not get into contact with the longitudinal end of the elongate compartment and will consequently not take a meandering form during its insertion. Nevertheless, since the snow chain casing can be stored in a vertical position, the cross sectional dimension of the snow chain has to be dimensioned such that the flexible elongate element cannot collapse when the snow chain casing is positioned vertically.

[0055] According to a modification, a hook or coupler is provided in the end region of the elongate compartment near the opening. Preferably, the hook is arranged in the flexible elongate compartment so as to extend in the longitudinal direction at least partially into the opening or is provided such that it can be grasped through the opening. This hook is used to fix an end of the snow chain thereon. This can be beneficial for long time storage of the snow

chains because the flexible elongate element can extend in its longitudinal direction. This counteracts a deformation of the flexible elongate element occurring when storing the same in a meandering way over a long time. Preferably, the elongate compartment is dimensioned such that in case the snow chain casing is stored vertically the flexible elongate element of the snow chain can fully extend and the tip portion of the flexible elongate element does not get in contact with the end portion of the elongate compartment.

Claims

1. A snow chain casing (1) comprising at least one elongate compartment (2) for accommodating a single snow chain (3), the snow chain (3) comprising a flexible elongate element (4) which can be formed to a ring and at which anti-skid elements (5) are attached so as to extend from the flexible elongate element (4), said at least one elongate compartment (2) comprising an opening (6) in an end region thereof dimensioned for inserting said snow chain (3), wherein the cross sectional dimension of the elongate compartment (2) is determined under consideration of the stiffness of the flexible elongate element (4) of the snow chain (3) to be accommodated in the elongate compartment (2) in order to restrict a longitudinally collapsing of the flexible elongate element (4) when accommodated in the elongate compartment (2).
2. Snow chain casing (1) according to claim 1, wherein the cross sectional dimension of the elongate compartment (2) is determined such that the flexible elongate element (4) is pushable into said elongate compartment (2).
3. Snow chain casing (1) according to one of claims 1 and 2, wherein the cross sectional dimension of the elongate compartment (2) is determined such that the flexible elongate element (4) is insertable into the elongate compartment (2) by gravitational force.
4. Snow chain casing (1) according to one of the preceding claims, wherein the longitudinal movement of the flexible elongate element (4) is restricted by contact of its tip portion with the end portion (15) of the snow chain casing (1).
5. Snow chain casing (1) according to one of the preceding claims, wherein the cross sectional dimension of the elongate compartment (2) is determined such that the flexible elongate element (4) is accommodated in the elongate compartment (2) in a meandering way and contacts the inner peripheral surface of the elongate compartment (2) at at least two contact points.
6. Snow chain casing (1) according to claim 5, wherein said cross sectional dimension of the elongate compartment (2) is dimensioned such that when a flexible elongate element (4) is present in said elongate compartment (2) and a plane crossing the elongate compartment (2) substantially perpendicular to its longitudinal axis is spanned at any point in the longitudinal direction at which the flexible elongate element (4) is present, that plane intersects with the flexible elongate element (4) at one position only.
7. Snow chain casing (1) according to one of the preceding claims, wherein the opening (6) is a slit which is aligned with or is cross to the longitudinal direction of the elongate compartment (3) and is, preferably, provided at a predetermined distance (d) from an end of the snow chain casing (1) such that a portion of the elongate compartment (2) is formed between said opening (6) and the end of the snow chain casing (1).
8. Snow chain casing (1) according to one of the preceding claims, further comprising a flap and preferably a Velcro fastener for closing the opening (6).
9. Snow chain casing (1) according to one of claims 1 to 7, further comprising a zipper for closing said opening (6).
10. Snow chain casing (1) according to one of the preceding claims, wherein the length of the at least one elongate compartment (2) is longer than the length of the elongate flexible member (4) of the snow chain to be accommodated therein when the flexible elongate member (4) is fully longitudinally extended.
11. Snow chain casing 1 according to one of the preceding claims, wherein each elongate compartment is formed by two cloths (12, 13) sewn or sealed together at their edges.
12. Snow chain casing 1 according to one of the preceding claims, comprising two elongate compartments (2) separated by means of a web portion and are preferably formed by two flexible side layers (12, 13) and an internal layer (11) between the two side layers (12, 13), the internal layer (14) forming the web portion.
13. Snow chain casing (1) according to one of the preceding claims, wherein at least one draining hole (14) is formed in each elongate compartment (2), preferably centrally and/or at one or both ends of each compartment (2).
14. Snow chain casing (1) comprising at least one elongate compartment (2) for accommodating a single snow chain (3), said at least one elongate compartment

ment (2) comprising an opening (6) in an end region thereof dimensioned for inserting said snow chain (3).

15. Anti-skid system comprising the snow chain casing (1) according to one of the preceding claims and a snow chain (3) accommodated in a compartment (2) of said snow chain casing (1).

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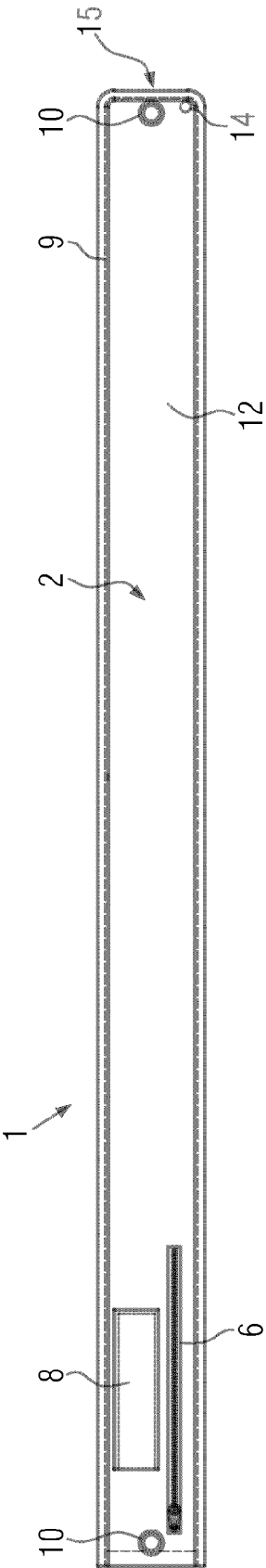


FIG. 1a

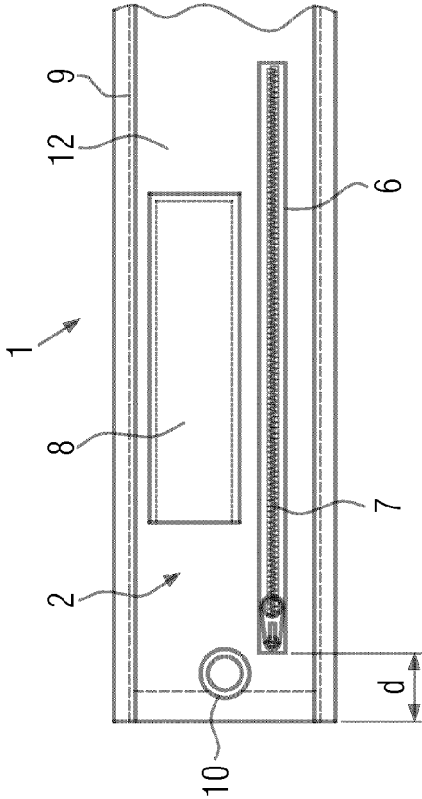


FIG. 1b

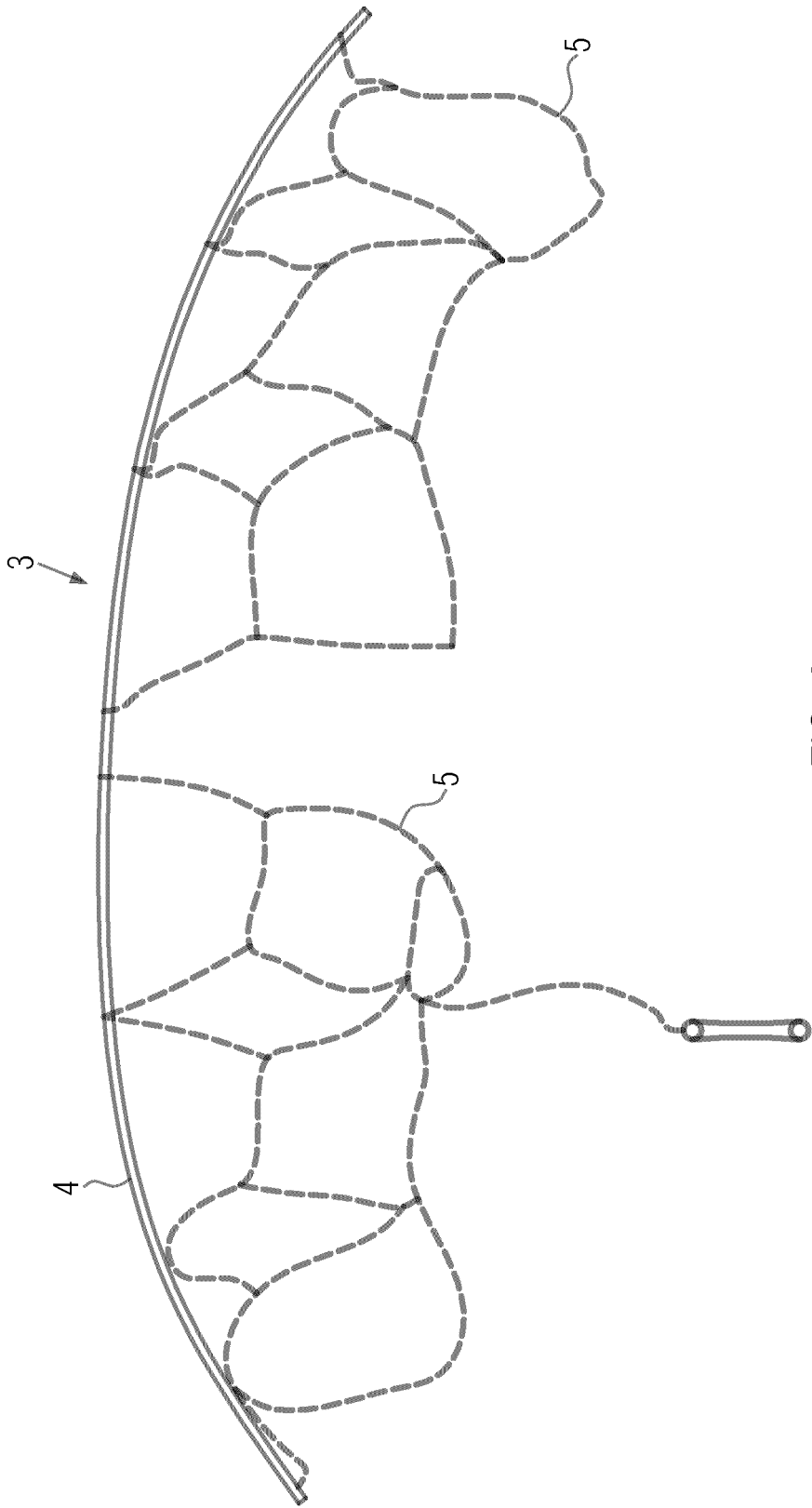


FIG. 2

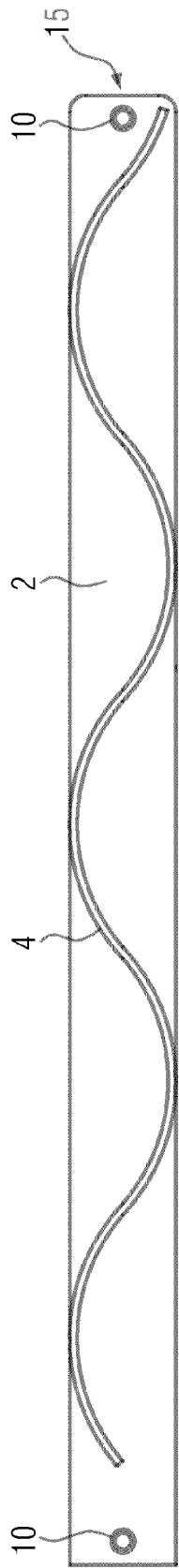


FIG. 3

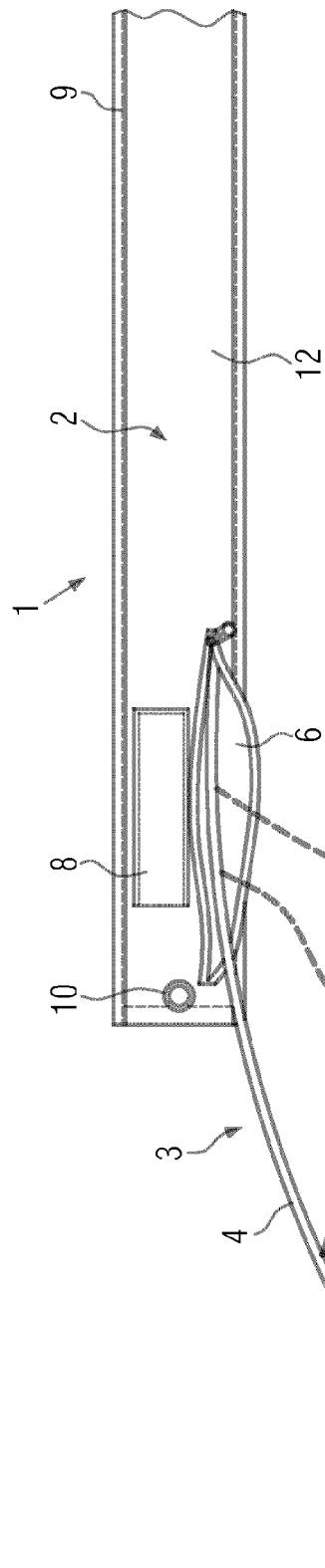


FIG. 4

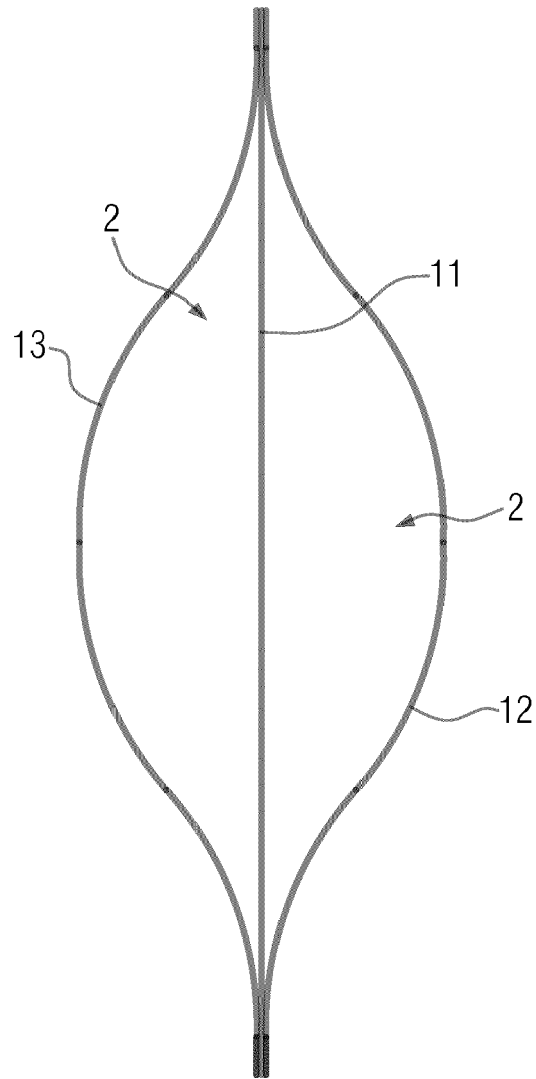


FIG. 5



EUROPEAN SEARCH REPORT

Application Number
EP 14 15 4365

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 803 366 A1 (THULE SPA [IT]) 4 July 2007 (2007-07-04) * paragraph [0014] - paragraph [0020]; figures 1-5 * -----	1-4,7-9, 11,12	INV. A45C11/26 B65D85/00
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D B60C A45C
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 23 June 2014	Examiner Czerny, M
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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