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(54) **BUCKLE FOR FIXING ACCESSORIES**

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(57) **ABSTRACT**

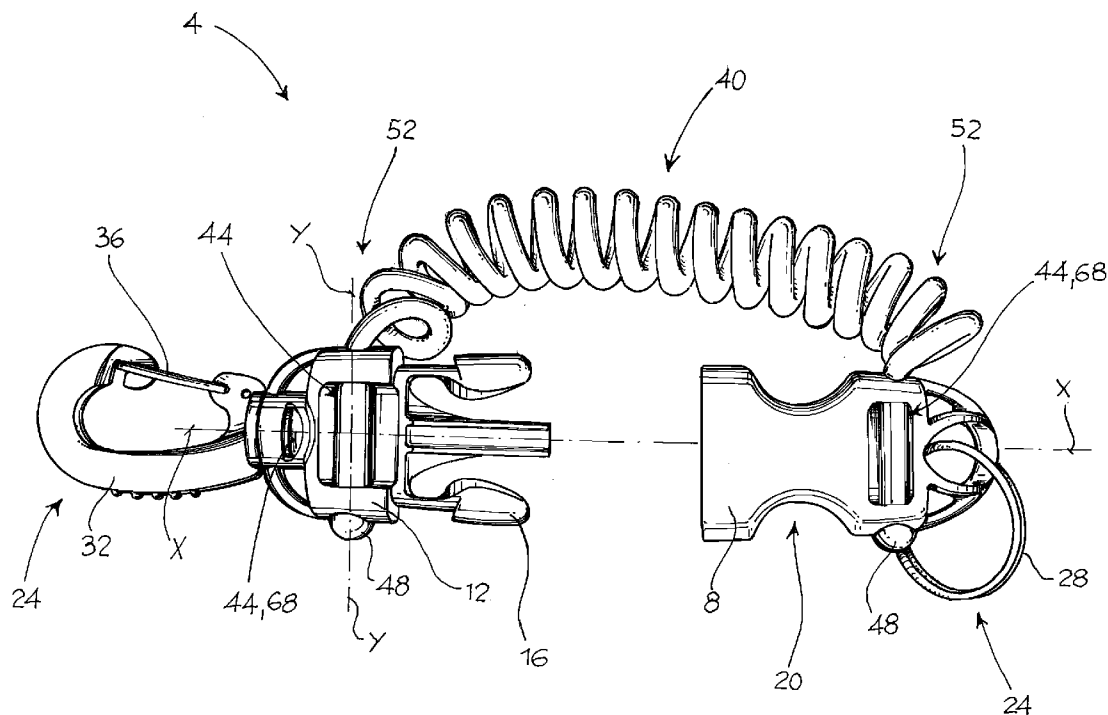
A buckle for the fixing of accessories and in particular for the fixing of diving accessories, such as, for example a torch, to a diving jacket. The buckle comprises a male and a female portion that can be hitched to one another and connected to the accessory and the jacket by hitching means, such as rings or spring catches. The portions of the buckle are provided with a connection element that maintains its mechanical connection even in buckle release conditions. Advantageously, in the male and female portions of the buckle there are fixing seats that accommodate both the connection element and the hitching means for the items of clothing and for the accessories.

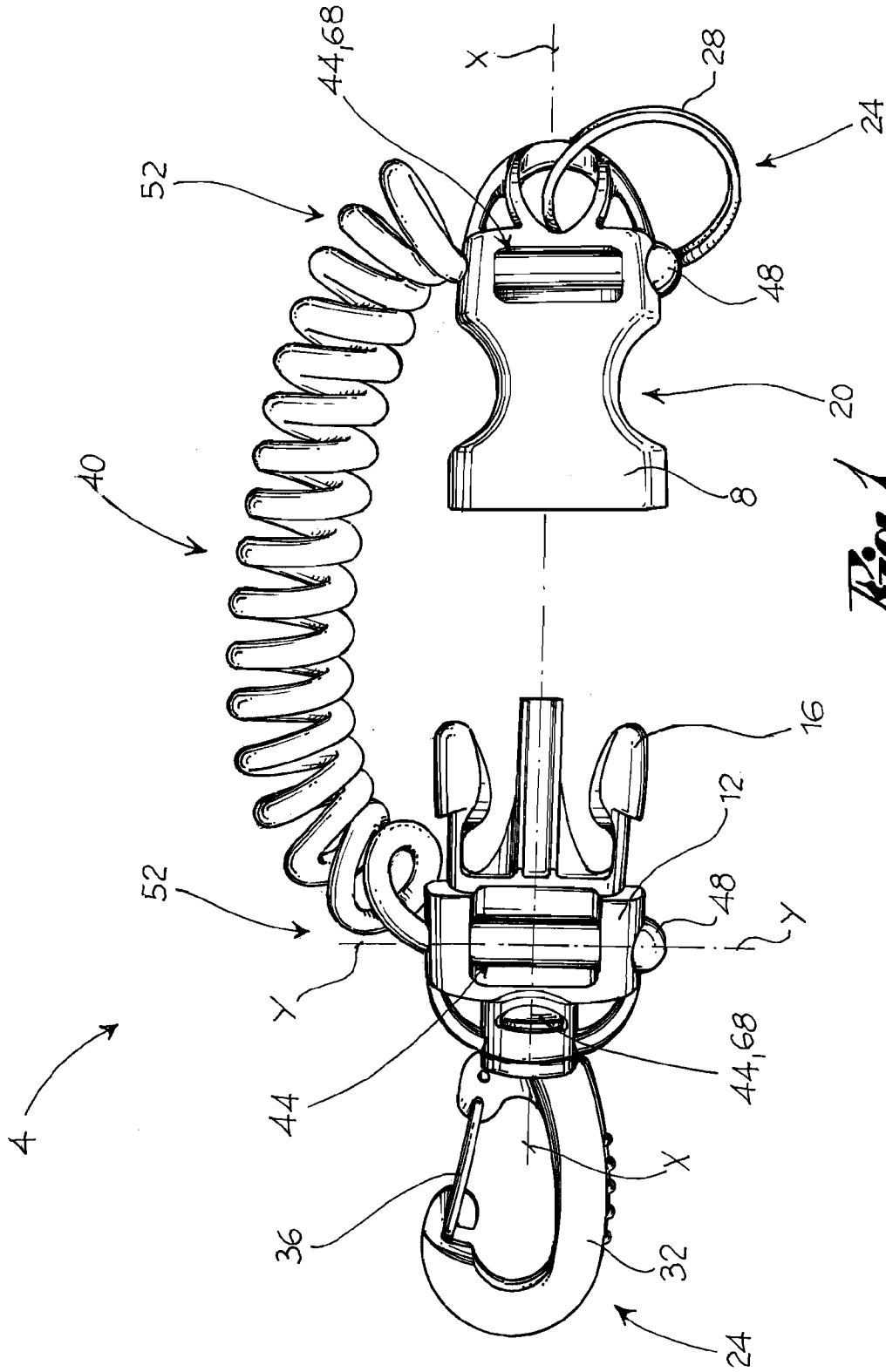
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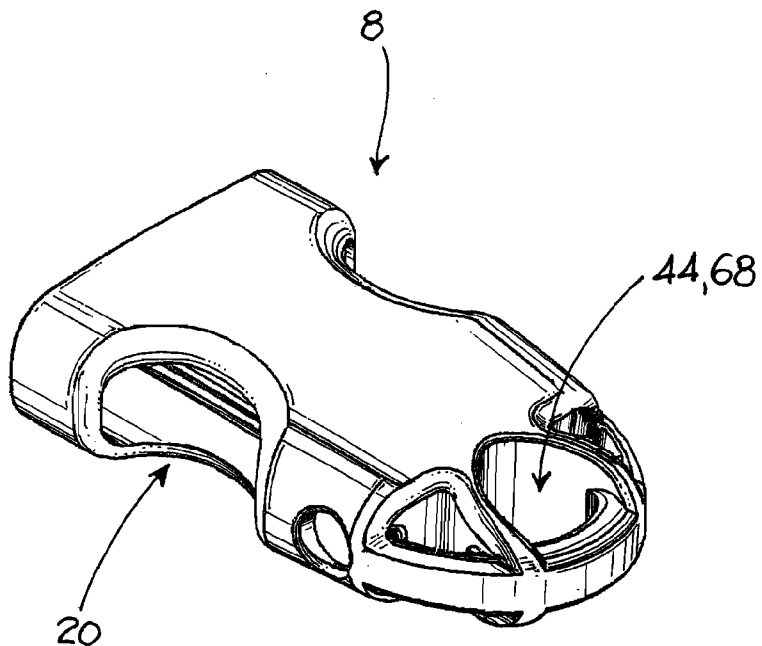
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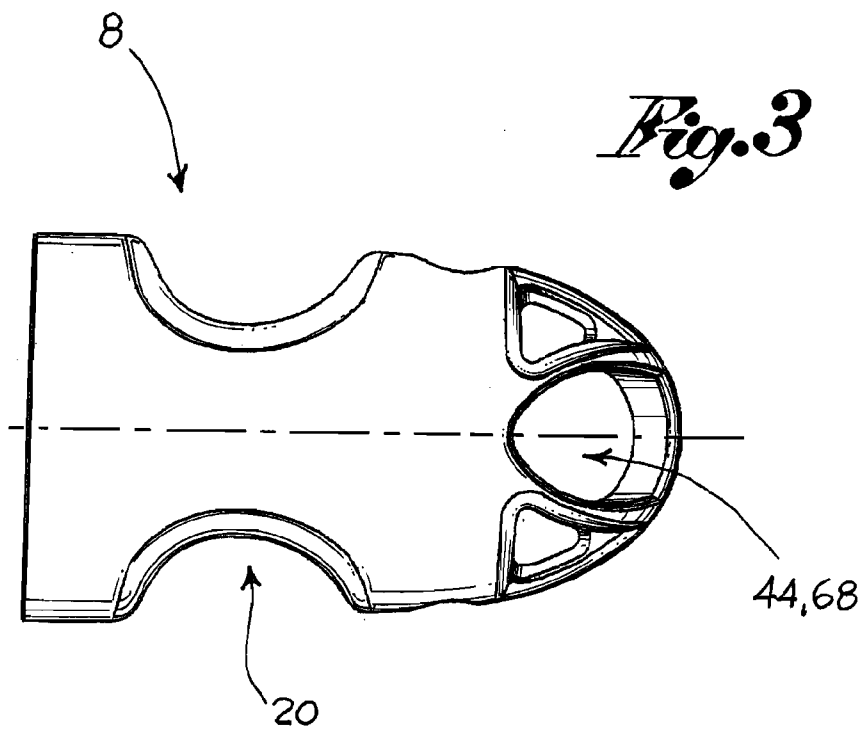




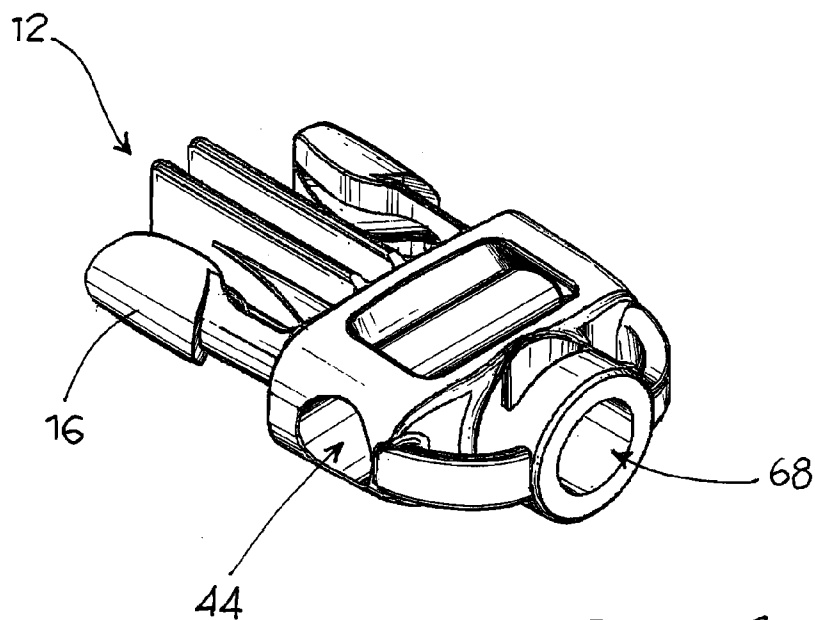
*Fig. 1*



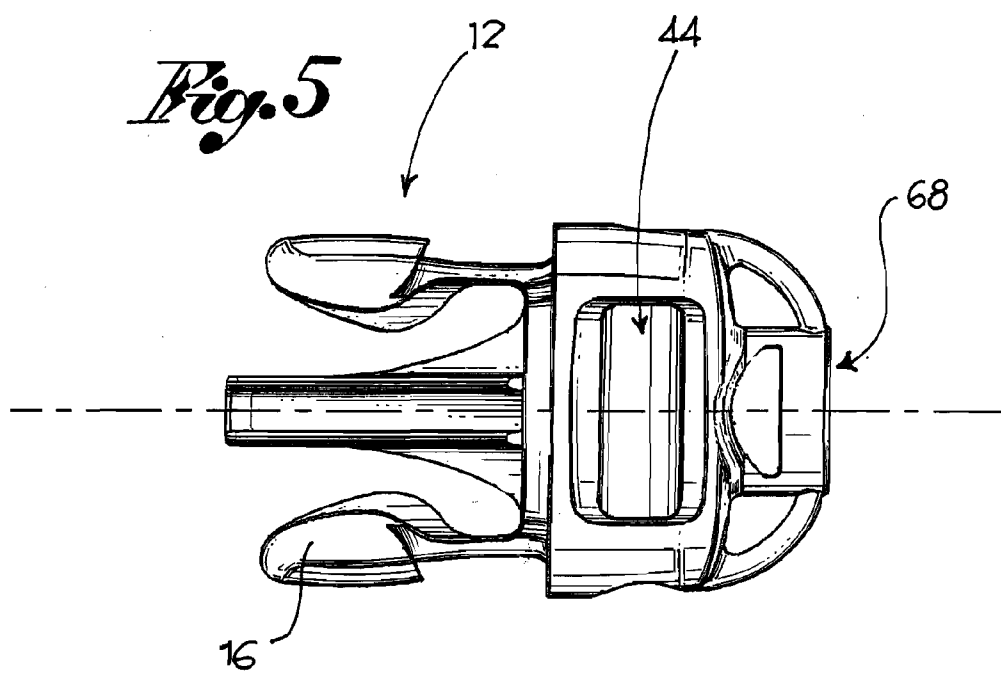
*Fig. 2*



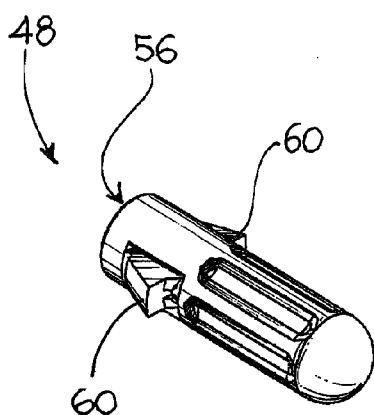
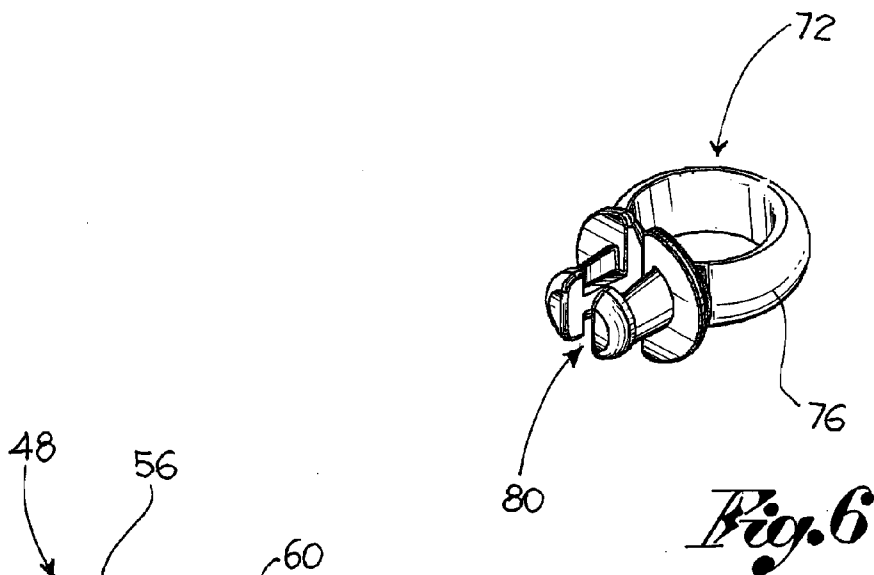
*Fig. 3*



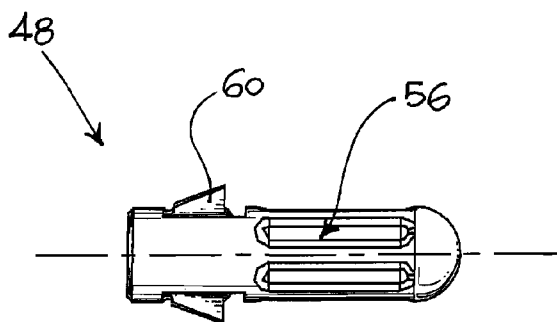
*Fig. 4*



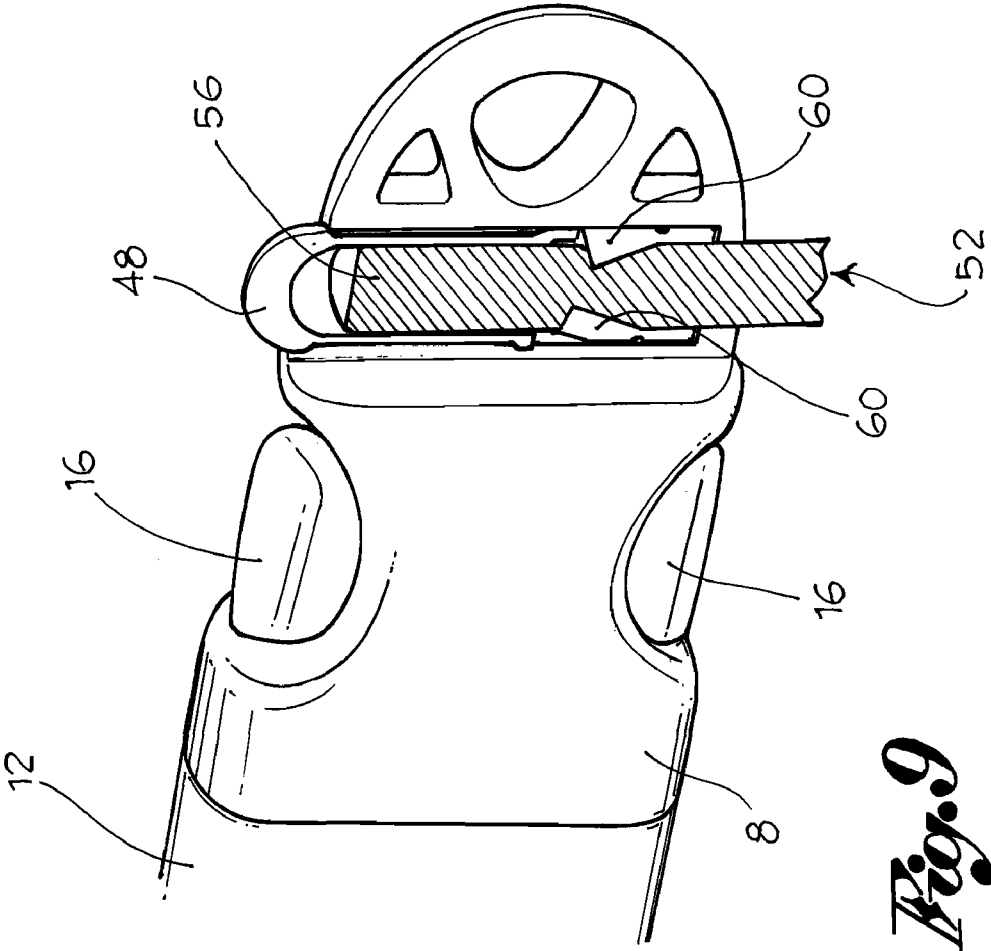
*Fig. 5*



*Fig. 7*



*Fig. 8*



*Fig. 9*

**BUCKLE FOR FIXING ACCESSORIES**

**FIELD OF THE INVENTION**

[0001] The following invention relates to a buckle for the fixing of accessories on items of clothing, and, in particular, a buckle for the fixing of diving accessories, such as for example, a torch, onto variable-trim jackets for diving.

**BACKGROUND OF THE INVENTION**

[0002] In particular, systems for making buckles for fixing articles to various types of items of clothing are known. This need, which in the clothing sector is dictated essentially by aesthetic motivations, is very important in the diving sector.

[0003] In fact, divers often have to carry with them during a dive a plurality of accessories, such as, for example, a torch or a camera, all of which must be joined to the jacket.

[0004] It is in actual fact very important that the diver's equipment is as close together as possible and remains close to the body to improve the hydrodynamics of the diver, to prevent the risk of damaging the underwater environment or to avoid catching the equipment against obstacles.

[0005] Buckle structures are therefore known having a male portion and a female portion for rapid connection and release, wherein said portions are in turn respectively connected to the item of clothing or jacket and the accessory to be attached.

[0006] To avoid that in release position there is a risk of losing the accessory, especially during a dive and to make it possible to always have the hands free even in release position, it is known to fit the portions of the buckle with a connection element, such as, for example, an elastic cord that, in addition to preventing the accessory from being lost, also makes it possible to take the accessory away from the item of clothing. This possibility is particularly felt in diving when, for example, it is necessary to grasp the torch and light up a precise point.

[0007] However, the solutions of the known art present certain drawbacks.

[0008] In actual fact, the buckles of the known art comprise a plurality of hitching rings and relative straps to allow the joining of the portion of the buckle and the connection element.

[0009] In this way, the structure of the buckle is relatively complex to make and assemble.

[0010] Furthermore, the connecting straps can be easily caught in the equipment and they constitute easily deteriorable elements if subject to the corrosive action of seawater.

[0011] The need is therefore felt for a buckle structure that allows the mobile fixing of equipment and that at the same time has a simple and sturdy construction so as to avoid early wear and possible catching of the equipment that would be tiresome and also dangerous during a dive.

**SUMMARY OF THE INVENTION**

[0012] The aim of this invention is to make a buckle that resolves the cited drawbacks of the known art.

[0013] These drawbacks and limitations are resolved by a buckle as described below.

**BRIEF DESCRIPTION OF THE DRAWINGS**

[0014] Further characteristics and advantages of this invention will be further evident in the description that follows of its preferred and non-limiting embodiments, wherein:

[0015] FIG. 1 is a plan view of a buckle in agreement with one embodiment of the present invention;

[0016] FIG. 2 is a perspective view of a detail of the buckle of FIG. 1;

[0017] FIG. 3 is a plan view of the detail of FIG. 2;

[0018] FIG. 4 is a perspective view of a further detail of the buckle of FIG. 1;

[0019] FIG. 5 is a plan view of the detail of FIG. 4;

[0020] FIG. 6 is a perspective view of a further detail of the buckle of FIG. 1;

[0021] FIG. 7 is a perspective view of a further detail of the buckle of FIG. 1;

[0022] FIG. 8 is a plan view of the detail of FIG. 7; and

[0023] FIG. 9 is a perspective view, partially in section, of a detail of the buckle of FIG. 1.

[0024] The elements or parts of elements in common between the embodiments described below will be indicated with the same numbers.

**DETAILED DESCRIPTION OF THE INVENTION**

[0025] With reference to the above figures, 4 globally indicates a buckle for the fixing of articles on items of clothing or travel equipment, and in particular for the fixing of diving accessories to diving jackets.

[0026] For example, a typical use of the buckle according to the present invention consists in fixing diving torches to diving jackets.

[0027] The buckle 4 comprises a female portion 8 and a male portion 12, that can be hitched with one another, for example according to a clip coupling.

[0028] According to one possible embodiment, the male portion 12 comprises at least one tine 16 suited to hitching elastically in a corresponding recess 20 of the female portion 8. Preferably the tine 16 is accessible from outside, so as to be able to release the buckle manually. It is also possible to make a buckle 4 wherein the male and female portions 12, 8 are releasable using a button. Preferably said male and female portions 12, 8 are made in polymeric material, resistant to the corrosion of the water.

[0029] Each portion 8, 12 is provided with hitching means 24 for hitching the same portions of the buckle 4 respectively to items of clothing and/or accessories.

[0030] For example, the hitching means can comprise a ring 28, preferably in a metal material, that can be easily hitched to a jacket loop to join the buckle to the same jacket.

[0031] According to one embodiment, the hitching means 24 include a spring catch 32, provided with a spring clip 36, used for example to hitch an accessory, such as a torch.

[0032] Preferably, the buckle 4 comprises a connection element 40 connecting said male and female portions 12,8 to one another in both a hitching configuration and a release configuration, to guarantee a mechanical connection between the male and female portions also in a release configuration thereof. In other words, the male and female portions are always joined together, to avoid accidental loss of the accessory when the buckle is opened.

[0033] For example, the connection element 40 is an extendible elastic cable or a spiral cable, which is also extendible, so as to allow the controlled moving away of the accessory from the jacket, after having released the buckle 4.

[0034] Advantageously, in the male 12 and female 8 portions there are fixing seats 44 that accommodate both separate portions of the connection element 40 and the hitching means 24 for the items of clothing and for the accessories.

[0035] In other words, the hitching means 24 and the connection element 40 are connected directly to the fixing seats 44 made on the male 12 and female 8 portions of the buckle 4, without the interposition of further elements, such as, for example, laces or ties for example in fabric.

[0036] According to one embodiment, the fixing seats 44 house a pin 48 mechanically connected to at least one of the portions of the connection element 40.

[0037] Preferably, the male 12 and female 8 portion each comprise a pin 48 mechanically connected to an extremity 52 of the connection element 40.

[0038] For example, the rug 48 comprises a cavity 56 that houses an extremity 52 of the connection element 40.

[0039] According to one embodiment, the extremity 52 is trapped inside the cavity 56.

[0040] For example, the pin 48 comprises at least one tooth 60, suited to being joined in a recess made in the fixing seat 44.

[0041] Preferably, the tooth 60 is elastically joined to the pin 48 so as to allow a click hitching of the pin 48 in the respective fixing seat 44.

[0042] The pin 48 may be arranged laterally with respect to the male 12 and female 8 portions, so as to arrange the extremity 52 of the connection element 40 in a transverse direction Y-Y with respect to a hitching/releasing direction X-X of the buckle 4.

[0043] The fixing seats 44 comprise at least one fixing hole 68 that houses the hitching means 24 for the items of clothing and accessories.

[0044] The fixing holes 68 are associated to the ring 28 and the spring catch 32 for the connection of the buckle 4 to the jacket and the relative accessory.

[0045] According to one possible further form of embodiment, the spring catch 32 is joined to the fixing hole 68 by the interposition of an elastic hook 72 having a ring-shaped portion 76 provided with a notch 80 for giving elasticity to the hook.

[0046] The method for the making/assembly of a buckle according to the invention will now be described.

[0047] In particular, the male 12 and female 8 portions of the buckle 4 are made by molding, preferably in a polymer material.

[0048] The extremities 52 of the connection element 40 are connected to the pins 48, for example by forced or clip connection or by gluing.

[0049] The pins 48 are inserted into the relative fixing seat 44, so that the teeth 60 flex elastically towards the interior of the cavity 56 so as to pinch the corresponding extremity 52 of the connection element 40 (FIG. 9); the teeth 60 then fit onto the respective male or female portion of the buckle guaranteeing a secure fixing of the pin 48 and therefore of connection element 40.

[0050] In this way, after the insertion of the pins, the teeth open and prevent any possible detachment of the pins 48 from the seats 44.

[0051] The hitching means are then associated to the seats 44 of the buckle 4.

[0052] For example the ring 28, preferably in metal material, can be inserted taking care to previously open the coils of the same so as to allow them to cross from one edge of the same.

[0053] The insertion of the spring catch 32 may take place directly on the seat 44 by the interposition of a further metal elastic ring or, more preferably, by means of the interposition of the elastic hook 72.

[0054] In particular, the elastic hook 72 is provided with a notch 80 that makes it possible to open the extremities of the hook 72 and to allow its clip fixing into the fixing hole 68.

[0055] As can be illustrated by the description, the buckle according to the invention makes it possible to overcome the drawbacks presented in the known art.

[0056] In particular, the buckle is externally compact and therefore reduces the risk of possible tangling with the equipment or the diving environment.

[0057] Furthermore, the buckle does not envisage fabric straps of any kind that could in the long term be damaged by repeated rubbing and the corrosive action of seawater.

[0058] Therefore, the fixing of the connection element is extremely safe and the risk of accidentally loosing the accessory the buckle is connected to, during the condition of release due to sudden breakage of the same straps, is avoided.

[0059] The compact and shortened size of the buckle, compared to the systems of the known art, makes it possible to maintain the equipment or accessories connected to it, in a position next to the body of the wearer and therefore favour the hydrodynamics of the diver and at the same time they further prevent the equipment from colliding with the diving environment.

[0060] Furthermore, the positioning of the connection element in a transverse direction with respect to the direction of hitching/release of the buckle makes use of the buckle even easier. In fact, unlike the buckles of the known art, the connection element does not interfere with the buckle, but rather is in a lateral position to it, thus allowing the user to hitch and release the buckle even with just one hand.

[0061] A man skilled in the art, in order to satisfy contingent and specific requirements, will be able to make various modifications and variants to the buckles described above, all of which being within the scope of this invention as defined by the following claims.

I claim:

1. A buckle for the fixing of articles on items of clothing or travel equipment, and in particular for the fixing of diving accessories to diving jackets, comprising

a female and a male portion, that can be hooked together, each female and male portion being fitted with hooking means for hooking the portions of the buckle to items of clothing and/or accessories,

a connection element connecting said male and female portions to one another in both a hooking configuration and an unhooking configuration, to guarantee a mechanical connection between the male and female portions also in an unhooking configuration thereof, wherein

in the male and female portions of the buckle there are fixing seats that house both individual portions of the connection element and the hooking means for items of clothing and accessories.

2. The buckle according to claim 1, wherein the fixing seats house a pin mechanically connected to at least one of said portions of the connection element.

3. The buckle according to claim 1, wherein the pin comprises a cavity that houses an extremity of the connection element.



4. The buckle according to claim 3, wherein said extremity is trapped inside the cavity.

5. The buckle according to claim 2, wherein the pin comprises at least one tooth that traps the pin in the respective fixing seat.

6. The buckle according to claim 5, wherein said tooth is elastically joined to the pin so as to allow an elastic gripping of the relative extremity of the connection element housed in a cavity of the pin.

7. The buckle according to claim 2, wherein said pin is arranged laterally with respect to the male and female portions, so as to arrange the extremity of the connection element in a transverse direction with respect to a hooking/unhooking direction of the buckle.

8. The buckle according to claim 1, wherein the fixing seats comprise at least one fixing hole that houses the hooking means for the items of clothing and accessories.

9. The buckle according to claim 8, wherein the fixing hole is associated with at least one ring for connecting the buckle to a jacket.

10. The buckle according to claim 8, wherein the fixing hole is connected to a spring catch fitted with a clip.

11. The buckle according to claim 10, wherein the spring catch is joined to the fixing hole by the interposition of an elastic hook.

12. The buckle according to claim 11, wherein the elastic hook comprises a ring-shaped portion fitted with a notch to confer elasticity to the hook.

13. The buckle according to claim 1, wherein the connection element is an extendible elastic cable.

14. The buckle according to claim 1, wherein the connection element is a spiral cable.

15. The buckle according to claim 1, wherein the male portion comprises at least one tine suited to elastically hooking into a corresponding recess of the female portion, the tine being accessible from outside the buckle so as to permit manual hooking/unhooking of the buckle.

16. The buckle according to claim 1, wherein said male and female portions are made using polymeric material.

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