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(54) **Coupling element for buckles and coupling system comprising said element**

(57) The invention concerns a coupling element (10; 50), adapted to be fixed to a buckle (30; 130) to be coupled to an article (A), and adapted to couple a strap (C) to the buckle (30; 130). The coupling element (10; 50) comprises a pin (14; 54) to be inserted in a hole obtained in the strap (C) and fixing means (13; 55) allowing the fixing to the buckle (30; 130) so as to lock the buckle (30; 130) to the article (A). The coupling element (10; 50) and the buckle (30; 130) form a coupling system (20; 120). In addition, the invention refers to a coupling system (20; 120) comprising the coupling element (10; 50) and the buckle (30; 130).

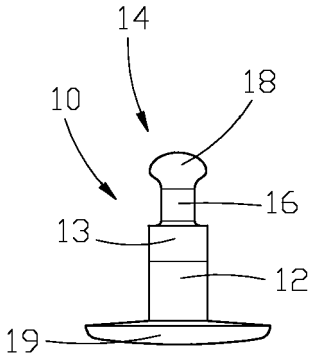

Fig. 1

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Description

[0001] The present invention refers, in general, to a coupling element for buckles and to the relative coupling system comprising such element. More particularly, the present invention refers to a coupling element to be used in the buckles for the fixing of a strap to the article on which the buckle itself is fixed; besides, the present invention refers to a coupling system comprising such coupling element and the relative buckle for the fixing of a strap to an article.

[0002] As is known, the coupling systems for the closure of belts, straps, shoes or other articles comprise buckles equipped with an appropriate buckle prong; for instance, in case of straps, the straps usually pass through the buckle and are fixed in the desired position by means of a buckle prong that passes through a hole made in the strap so as to allow the coupling of the strap with the article on which the buckle is fixed.

[0003] In case the strap and its buckle are relatively small in size, for instance in the width, the closing and opening operations are more complex: in fact, it is more difficult to move the buckle prong in order to insert it in the strap holes or to extract it from the strap holes. In addition, also the operations for the production and assembly of small buckles and small buckle prongs are more complex.

[0004] Besides, the coupling systems of the prior art are not easy to fix on the article to which these systems have to be united. In fact, the coupling element, that usually is a buckle prong, has to be fixed on the buckle. In turn, the buckle has to be fixed on the respective article.

[0005] The aim and function of the present invention is to supply a coupling element for buckles that facilitates the closing operations of the strap and relative buckles.

[0006] Another aim of the present invention is to supply a coupling element for buckles and a coupling system that are simple to carry out and easy to assemble.

[0007] Another aim of the invention is to offer a coupling element and a coupling system that simplify the fixing operations to fix the buckle to the respective article.

[0008] The above aims and other ones are achieved by a coupling element, adapted to be fixed to a buckle to be coupled to an article, and adapted to couple a strap to the buckle, at least one hole being obtained in said strap. In particular, the coupling element is characterized in that it comprises an enlarged body and a pin is coupled to a first end of said enlarged body and has a head adapted to be inserted in the at least one hole of the strap, and a disk is coupled to a second end, opposite to the first end, said enlarged body being adapted to transversally pass through the buckle and the article to which the buckle has to be fixed so that the disk abuts on the article and on abutting again on the first end of the enlarged body, said end widens so as to fix the buckle, the article and the coupling element to each other.

[0009] The conformation of the coupling element according to the invention enables to perform three functions at the same time.

[0010] The first function consists in fixing the coupling element to the article by the interference of a portion of the cylindrical body with the hole obtained in the article and by means of the disk abutting on the same article.

[0011] The second function refers to the fixing of the buckle to the article, said buckle being locked at the top by a flared portion of the enlarged body, said portion being formed as a result of the re-abutting on the first end of the same enlarged body, and at the bottom in abutment on the article itself.

[0012] The third function refers to the fixing of the strap to the article by means of a pin that is inserted in the hole obtained in the strap.

[0013] Advantageously, the enlarged body may comprise fixing means to enable the fixing to the buckle so as to improve the stability of the union of the coupling element to the buckle.

[0014] In particular, the first end of the enlarged body may comprise fixing means that are shaped like a flared portion.

[0015] In fact, the first end may have elastic properties so that if the first end is punched, it flares and a flared portion is obtained and locks into the hole obtained in the buckle.

[0016] In addition, the fixing means may be knurls obtained on the side surface of the enlarged body.

[0017] Advantageously, the pin may comprise a head and a neck so that the head of the pin may pass through the hole formed in the strap so that the strap is locked removably in its position.

[0018] The aims and advantages of the invention are also achieved by a coupling system to couple a strap to an article, characterized in that it comprises a coupling element as defined above and a buckle in which a hole is obtained to allow the coupling element to pass through so that the article is stuck between the buckle and the disk, and the strap is coupled to the pin of the coupling element.

[0019] Advantageously, the buckle may comprise a perimetric body and a central body in which the first hole is obtained to allow the coupling element to pass through, the perimetric body and the central body being connected to each other through at least one arm.

[0020] In addition, a cylindrical crown may protrude from the central body and is adapted to be received in the second hole obtained in the article so that the cylindrical crown abuts on the disk of the coupling element.

[0021] Besides, the aims of the invention are achieved through a coupling system comprising a buckle and a coupling element as defined above.

[0022] Further features and details of the invention will be better understood from the following description that is supplied as a non-restricting example as well as from the accompanying drawings wherein:

figg. 1, 2 are two schematic views, and precisely a side view and an axonometric view, respectively, of

a coupling element according to the invention;
fig. 3 is an axonometric view of the coupling element in fig. 1 when re-abutted for the fixing of a buckle on the respective article;
fig. 4 is an axonometric top view of a coupling system according to the invention, comprising the coupling element in fig. 1, secured to a buckle for their fixing to an article;
fig. 5 is a sectional side view of the coupling system in fig. 4, wherein the coupling element passes through the buckle and is re-abutted to ensure the fixing of the buckle to the article;
fig. 6 is a schematic side view of a coupling element according to a variant of the invention;
fig. 7 is an axonometric view of the coupling element in fig. 6 when re-abutted for the fixing of a buckle to the respective article;
fig. 8 is a sectional side view of a coupling system according to a variant of the invention, in which the coupling system in fig. 6 passes through a buckle and is re-abutted to ensure the fixing of the buckle to an article;
fig. 9 is an axonometric bottom view of the buckle in fig. 8;
fig. 10 is a side view of the coupling system in fig. 8.

[0023] With reference to the accompanying drawings, in particular figures 1 and 2, number 10 denotes a coupling system comprising a cylindrical body 12. A pin 14 is integrally united to a first end 13 of the cylindrical body 12 and comprises a head 18 and a neck 16 united to the first end 13 of the cylindrical body 12.

[0024] A disk 19 is integrally fixed to the second end of the cylindrical body 12, opposite to the first end 13. The diameter of the disk 19 is longer than the diameter of the cylindrical boy 12.

[0025] The coupling element 10 is used to carry out a coupling system 20 as represented in figures 4 and 5, comprising the same coupling element 10 and a buckle 30.

[0026] The buckle 30 comprises an essentially rectangular body 22 and a central body 24 fixed to the rectangular body 22 by means of two arms 26.

[0027] As visible in figure 5, the coupling element 10 passes through the article A on which the same buckle A has to be fixed, and the central body 24 of the buckle 30 through a hole formed there, until the disk 19 abuts on the article A. The cylindrical body 12 of the coupling element 10 is punched at the top so that the first end 13 is compressed and varies its shape so as to obtain a flared portion denoted by reference number 13' in figures 3 and 5.

[0028] In this way, the flared portion 13' of the coupling element 10 is rigidly fixed to the buckle 30 so that the article A is locked between the buckle 30 and the disk 19 of the coupling element 10.

[0029] In the upper part, a strap C is passed through the buckle 30; the head 18 of the coupling element 10 may be inserted in a hole formed in the strap C so that the same strap C is disposed around the neck 16 and the head 18 locks the strap C removably.

[0030] The conformation of the coupling element 10 according to the invention enables to perform three functions at the same time.

1. the fixing of the coupling element 10 to the article A by the interference of a portion of the cylindrical body 12, indicated with the reference number 17 in figure 5, in the hole obtained in the article A and by means of the disk 19 abutting on the same article;
2. the fixing of the buckle 30 to the article A, said buckle being locked at the top by the flared portion 13' and at the bottom in abutment on the article A itself;
3. the fixing of the strap C to the article A by means of the pin 14 that is inserted in the hole obtained in the strap C.

[0031] According to a variant of the invention, as illustrated in figures 6 and 7, reference number 50 denotes a coupling element comprising a cylindrical body 52. A pin 54 is integrally united to a first end 53 of the cylindrical body 52 while a disk 59 is fixed to a second end, opposite to the first end.

[0032] The pin 54 comprises a head 58 and a neck 56 united to the first end 53 of the cylindrical body 52.

[0033] The outer surface of the cylindrical body 52 has knurls 55.

[0034] The coupling element 50 may be used to carry out a coupling system like the coupling system 20 described above. In a system of this kind, the knurled surface allows to obtain a stable fixing of the coupling element 50 to the article A and to the buckle 30.

[0035] A different coupling system to be considered as included in the scope of protection of the invention is illustrated in figures 8, 9, 10 and indicated by reference number 120.

[0036] The coupling system 120 comprises a buckle 130 and the coupling element 50.

[0037] As illustrated in Figure 9, the buckle 130 comprises an essentially rectangular body 122 and a central body 124 fixed through two arms 126 to the rectangular body 122. A cylindrical crown 128 protrudes from the central body 124.

[0038] As illustrated in fig. 8, the coupling element 50 passes through the buckle 130, in particular through the central body 124 and the cylindrical crown 128 around which the article A is received, to which the buckle 130 has to be fixed.

[0039] The conformation of the buckle 130, and in particular the presence of the cylindrical crown 128, allows that the surface of the buckle 130 in contact with the knurled cylindrical body 52 of the coupling element 50 is enlarged. In this way, the fixing of the coupling element to the buckle is further improved.

[0040] It is to be intended that a similar coupling system

may be carried out with the buckle 130 and the coupling element 10 described previously.

[0041] Accordingly, the coupling element according to the invention enables to carry out a coupling system that facilitates the locking of a strap to a buckle and enables, at the same time, to fix a buckle to an article in a practical, safe way. Variants to be considered as included in the scope of protection of the invention are possible; for instance, the pin may have a shape different from the illustrated shape but it ensures, in any case, a removable fixing of the strap.

[0042] Obviously, the coupling element as well as the relevant coupling system may be produced in different sizes according to the application requirements.

Claims

1. Coupling element (10; 50), adapted to be fixed to a buckle (30; 130) to be coupled to an article (A), and adapted to couple a strap (C) to the buckle (30; 130), at least one opening being obtained in said strap (C), said coupling element (10; 50) being **characterized in that** it comprises an enlarged body (12; 52) and a pin (14; 54) is coupled to a first end (13; 53) of said enlarged body (12; 52) and is adapted to be inserted in the at least one opening of the strap (C), and a disk (19; 59) is coupled to a second end, opposite to the first end, said enlarged body being adapted to be inserted in a first hole obtained in the buckle and in a second hole obtained in the article (A) to which the buckle (30; 130) is to be fixed so as to transversally pass through the buckle (30; 130) and the article (A) so that the disk (19; 59) abuts on the article (A), said coupling element (10; 50) comprising fixing means (13'; 55) to fix the coupling element (10; 50) to the buckle (30; 130).

2. Coupling element (10; 50) according to claim 1, wherein the enlarged body (12; 52) comprises the fixing means (13'; 55).

3. Coupling element (10) according to one of claims 1, 2, wherein the first end (13) of the enlarged body (12) comprises the fixing means (13').

4. Coupling element (10) according to claim 3, wherein the first end (13) has elastic properties so that if the first end (13) is punched, it flares and a flared portion (13') is obtained and locks into the hole obtained in the buckle (30; 130).

5. Coupling element (50) according to one of claims 1, 2, wherein the fixing means are knurls (55) obtained on the side surface of the enlarged body (52).

6. Coupling element (10; 50) according to one of the preceding claims, wherein the pin (14; 54) comprises a head (18; 58) and a neck (16; 56).

7. Coupling system (20; 120) to couple a strap (C) to an article (A), **characterized in that** it comprises a coupling element (10; 50) according to one of the preceding claims and a buckle (30; 130) in which a hole is obtained to allow the coupling element (10; 50) to pass through so that the article (A) is stuck between the buckle (30; 130) and the disk (19; 59), and the strap is coupled to the pin (14; 54) of the coupling element (10; 50).

8. Coupling system (20; 120) according to claim 7, wherein the buckle (30; 130) comprises a perimetric body (22; 122) and a central body (24; 124) in which the first hole is obtained to allow the coupling element (10; 50) to pass through, the perimetric body (22; 122) and the central body (24; 124) being connected to each other through at least one arm (26; 126).

9. Coupling system (120) according to claim 8, wherein a cylindrical crown (128) protrudes from the central body (124) and is adapted to be received in the second hole obtained in the article (A) so that the cylindrical crown (128) abuts on the disk (59) of the coupling element (10; 50).

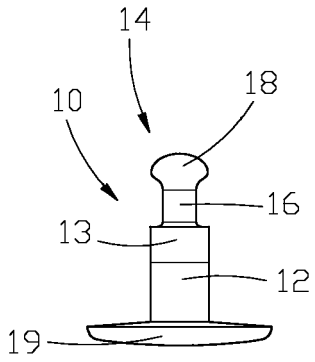

Fig. 1

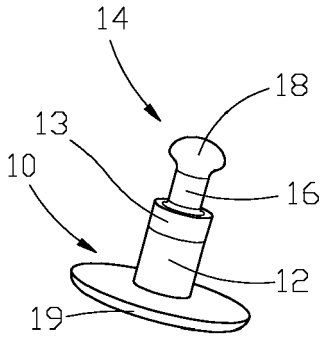

Fig. 2

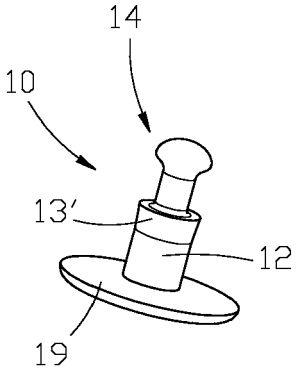

Fig. 3

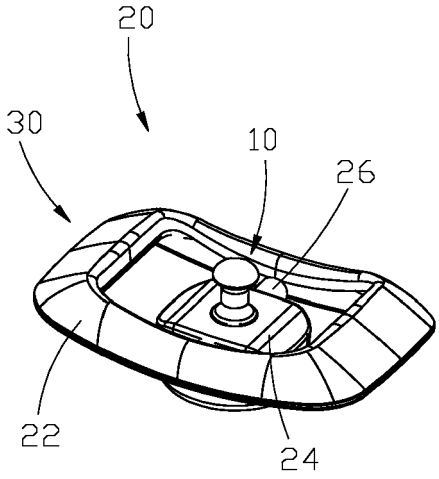

Fig. 4

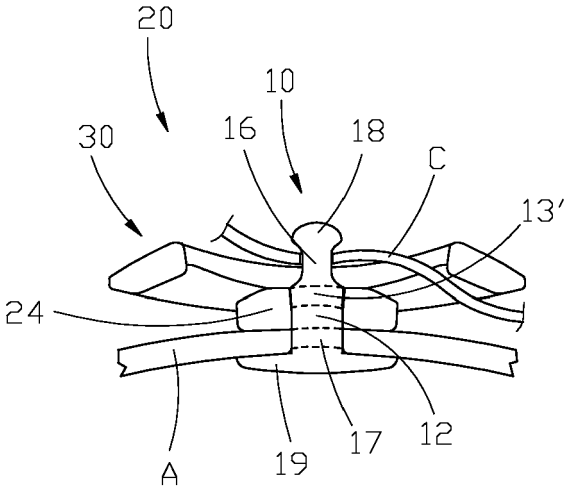

Fig. 5

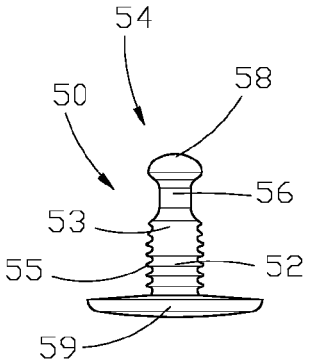

Fig. 6

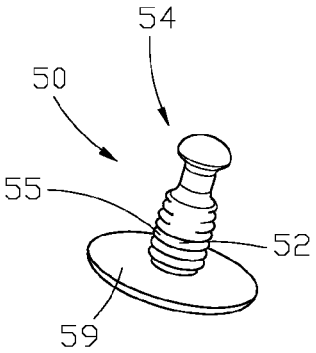

Fig. 7

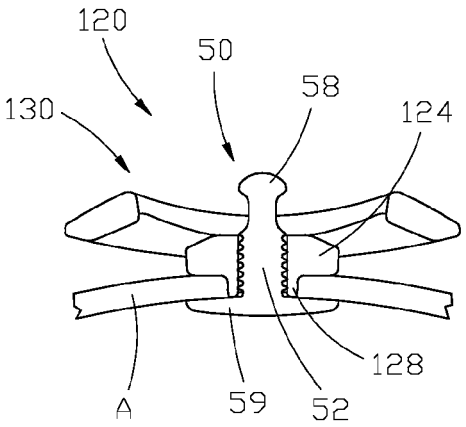

Fig. 8

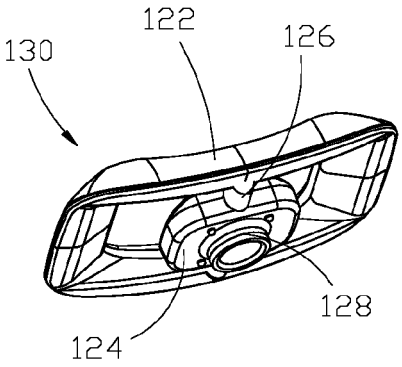

Fig. 9

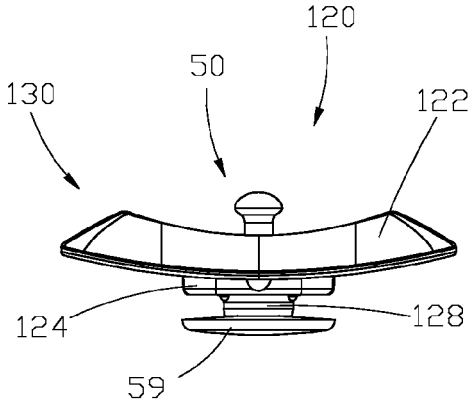

Fig. 10

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EUROPEAN SEARCH REPORT

Application Number
EP 14 15 8901

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	US 3 748 700 A (S.M. WILLEY) 31 July 1973 (1973-07-31) * column 2, line 49 - column 3, line 3 * * column 3, line 21 - line 32 * -----	1-9	INV. A44B11/22
			TECHNICAL FIELDS SEARCHED (IPC)
			A44B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	7 May 2014	Goodall, Colin

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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07-05-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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