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device (5, 16) enabling the shell to rotate relative to the elastic liner is arranged between the shell and the elastic liner.





## EUROPEAN SEARCH REPORT

 Application Number  
 EP 18 16 6784

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	* paragraphs [0049] - [0051]; figures 2,3 *	3,4	
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X	WO 2015/177747 A1 (LEATT CORP [US]; LEATT CHRISTOPHER JAMES [ZA]) 26 November 2015 (2015-11-26)	1	
A	* page 5, line 1 - page 7, line 13; figures 1-6 *	2-4	
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X	US 2014/096311 A1 (HALLDIN PETER [SE]) 10 April 2014 (2014-04-10)	1	TECHNICAL FIELDS SEARCHED (IPC)  A42B
A	* paragraph [0055]; figure 9 *	2-4	
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<div style="display: flex; justify-content: space-between;"> <div>           1            The present search report has been drawn up for all claims         </div> </div>			
Place of search		Date of completion of the search	Examiner
The Hague		2 August 2018	D'Souza, Jennifer
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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**CLAIMS INCURRING FEES**

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

**LACK OF UNITY OF INVENTION**

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-4

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



**LACK OF UNITY OF INVENTION**  
**SHEET B**

Application Number

EP 18 16 6784

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-4

The rotary impact buffering device comprises a plurality of buffering components (16); each buffering component comprises a plastic nail holder (18), a columnar elastic washer (21) and a plastic nail (19), wherein the plastic nail holder is inlaid in the inner side of the shell and provided with an outer step hole (17) with the small-diameter end located at the inner end, the elastic washer is provided with an inner step hole (20) with the small-diameter end located at the outer end, the outer end face of the elastic washer is tightly attached to the inner end face of the plastic nail holder, and the elastic washer and the plastic nail holder are connected through the plastic nail; each plastic nail comprises a platen (22), a nail rod (23) and an anti-disengaging buckle head (24), wherein the platen is located in the large-diameter section of the corresponding inner step hole, the nail rod penetrates through the small-diameter section of the corresponding inner step hole and the small-diameter section of the corresponding outer step hole, one end of the nail rod is connected with the platen, the diameter of the small-diameter section of the corresponding inner step hole is matched with the outer diameter of the nail rod, and the diameter of the corresponding small-diameter section of the outer step hole is greater than the outer diameter of the nail rod, and the anti-disengaging buckle head is located in the large-diameter section of the outer step hole and connected with the other end of the nail rod, and the inner end face of the elastic washer is connected with the elastic liner.

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2. claims: 1, 5-7

The rotary impact buffering device comprises a plurality of buffering assemblies (5); each buffering assembly comprises a mounting plate (8) and buffering columns (9), wherein the mounting plate is provided with a plurality of columnar buffering washers (6) and connected with the inner side of the shell, the mounting plate is also provided with mounting holes (10), the number of mounting holes is the same as that of the buffering washers, the buffering washers are arranged in the mounting holes in a one-to-one corresponding mode, the number of the buffering columns is the same as that of the buffering washers, and the buffering columns are embedded in inner holes of the buffering washers in a one-to-one corresponding mode; and the length of the buffering columns is smaller than the depth of the inner holes of the buffering washers, the height of the buffering washers is greater than the thickness of the mounting plate,



**LACK OF UNITY OF INVENTION**  
**SHEET B**

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

and the inner ends of the buffering washers is connected with the elastic liner.

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3. claims: 1, 8

The rotary impact buffering device comprises a notch (29), a plurality of elastic supporting columns (30) and a buffering pad (32), wherein the notch is formed in the inner side of the shell, the outer ends of the elastic supporting columns are connected with the bottom surface of the notch, the buffering pad is provided with positioning holes (31), the number of the positioning holes is the same as that of the elastic supporting columns, the buffering pad is arranged in the notch, and the outer ends of the elastic supporting columns are sleeved with the positioning holes in a one-to-one corresponding mode, and the inner ends of the elastic supporting columns are connected with the elastic liner.

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4. claims: 1, 9, 10

The safety helmet with a rotary impact buffering function further comprising U-shaped buffering strips (33), one end of each U-shaped buffering strip is connected with the elastic liner, the other end of each U-shaped buffering strip is connected with one end of a connecting strip (35), a buckle head (34) is arranged at the other end of each connecting strip, buckle holes (36) matched with the buckle heads are formed in the inner side of the shell, and the buckle heads are correspondingly clamped in the buckle holes.

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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02-08-2018

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

