US20180345049A1

AXIAL BUFFER DEVICE AND FALL PROTECTION DEVICE HAVING THE SAME

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專利書目資料

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申請人：YOKE INDUSTRIAL CORP

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專利簡介

緩衝機構

利用彈簧來降低防墜器
鎖定時所造成的加速度

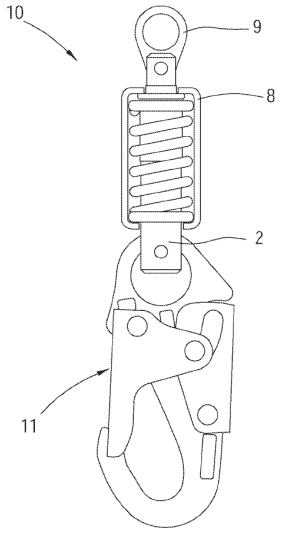
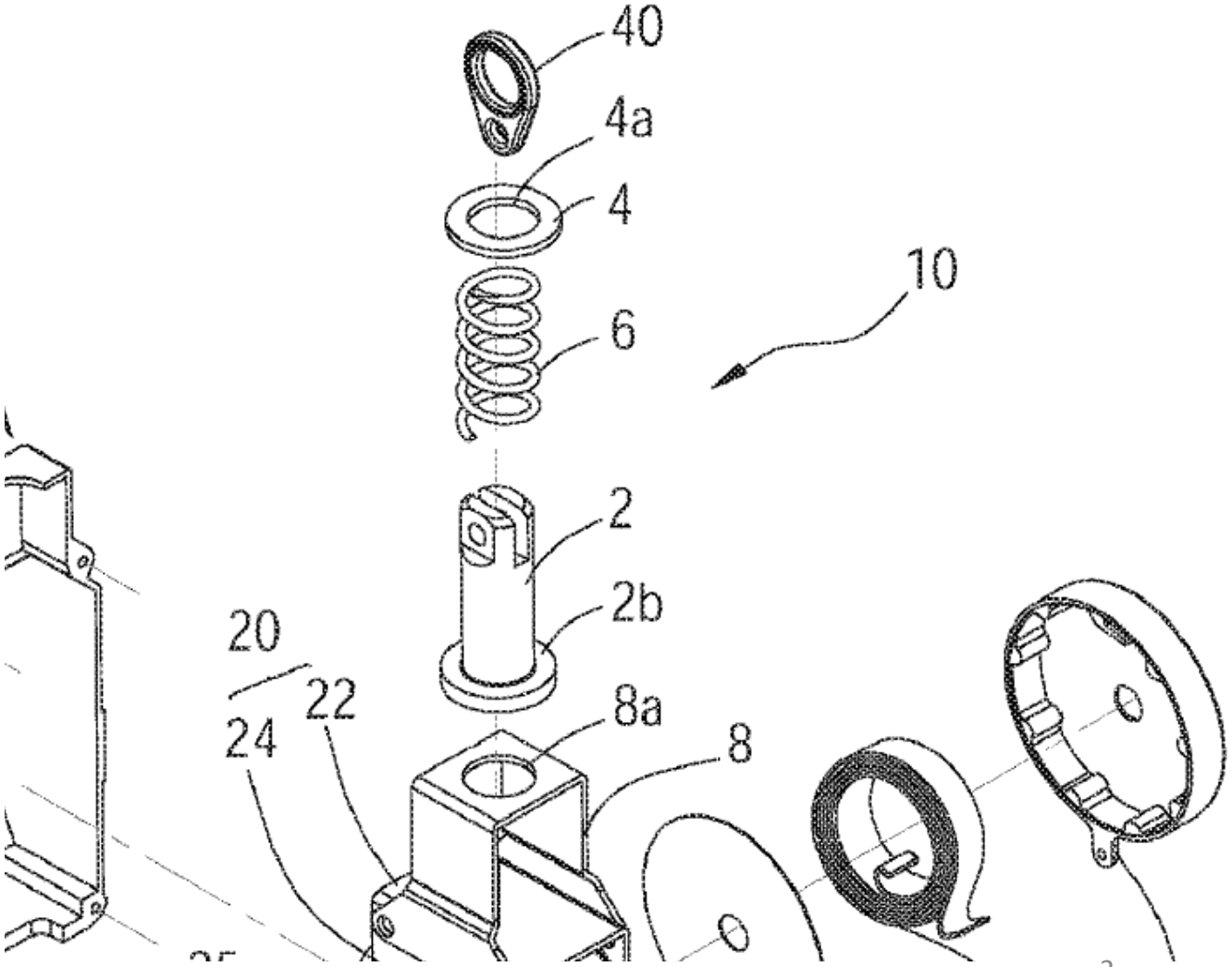
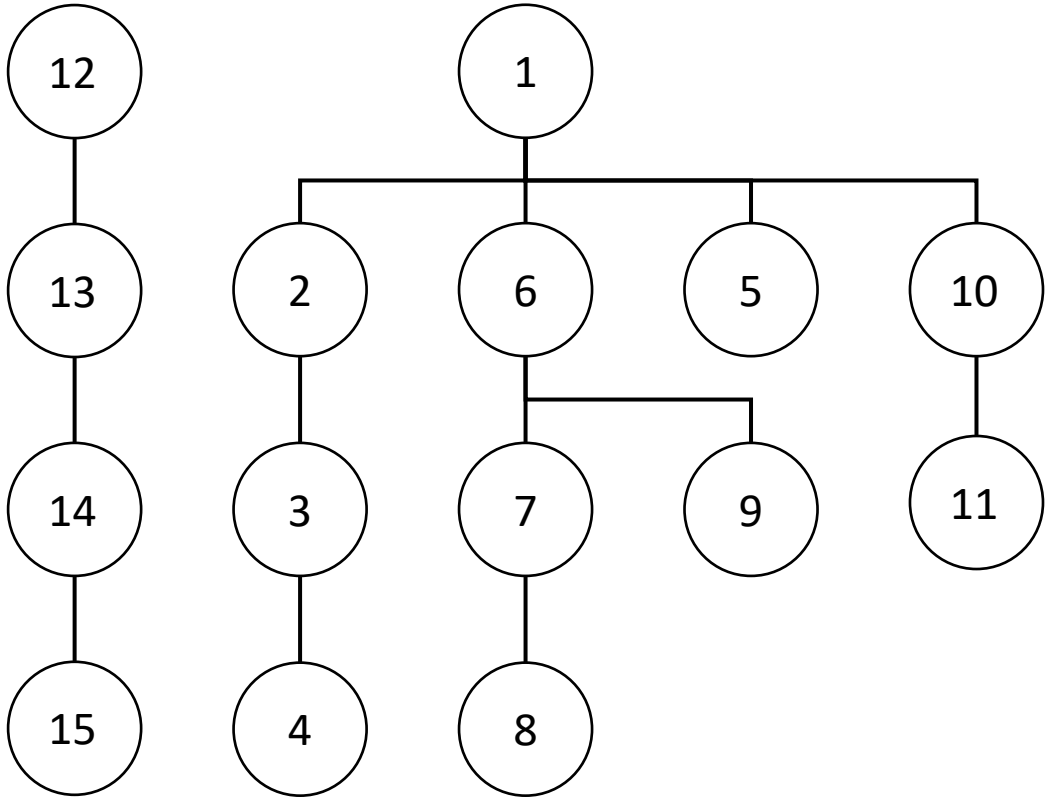


FIG.12



申請專利範圍



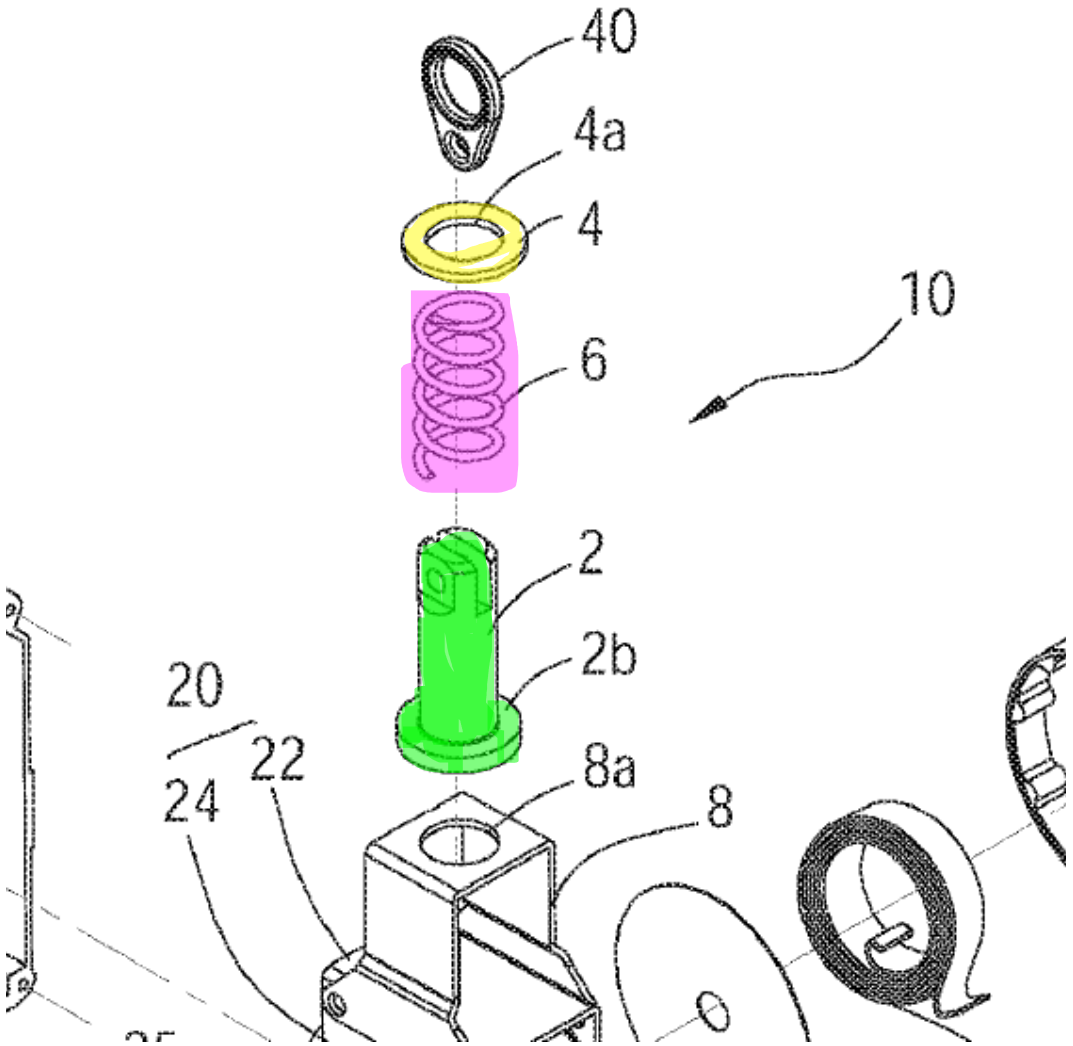
申請專利範圍

Claim 1

An axial buffer device, comprising:

a buffer rod, including a first friction surface; and

a buffer member, including a second friction surface which contacts the first friction surface; when any one of the buffer rod and the buffer member is pulled by a force which is greater than a default value to overcome a maximum friction between the buffer member and the buffer rod, the buffer member would slide on the buffer rod with friction.



檢索策略

前案檢索

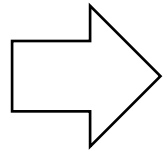
全文

FULL /(SRL相關關鍵字)

AND IPC /(SRL相關IPC)

AND FULL /(緩衝關鍵字)

AND FULL /(彈簧關鍵字)



483案

317專利家族

檢索日期：2020/5/22
檢索資料庫：Patent Cloud
檢索範圍：台灣、中國、美國

前案檢索

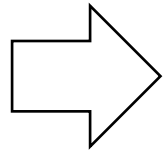
全文

FULL /(摩擦)

AND IPC /(SRL相關IPC)

AND FULL /(緩衝關鍵字)

AND FULL /(彈簧關鍵字)



1749案

1724專利家族

檢索日期：2020/5/22
檢索資料庫：Patent Cloud
檢索範圍：台灣、中國

引證文件

引證1

CN203777544U
坠落防护缓冲装置

申 請 日 ： 2014-03-27

公 告 日 ： 2014-08-20

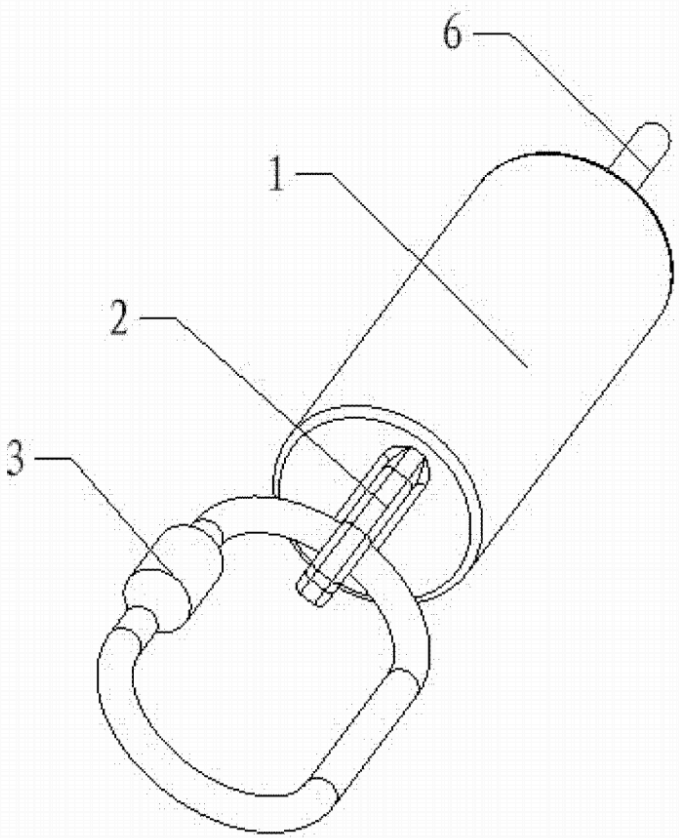


图 1

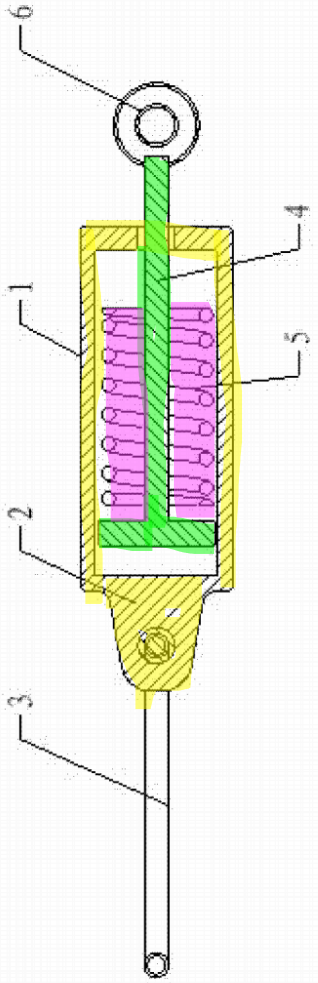


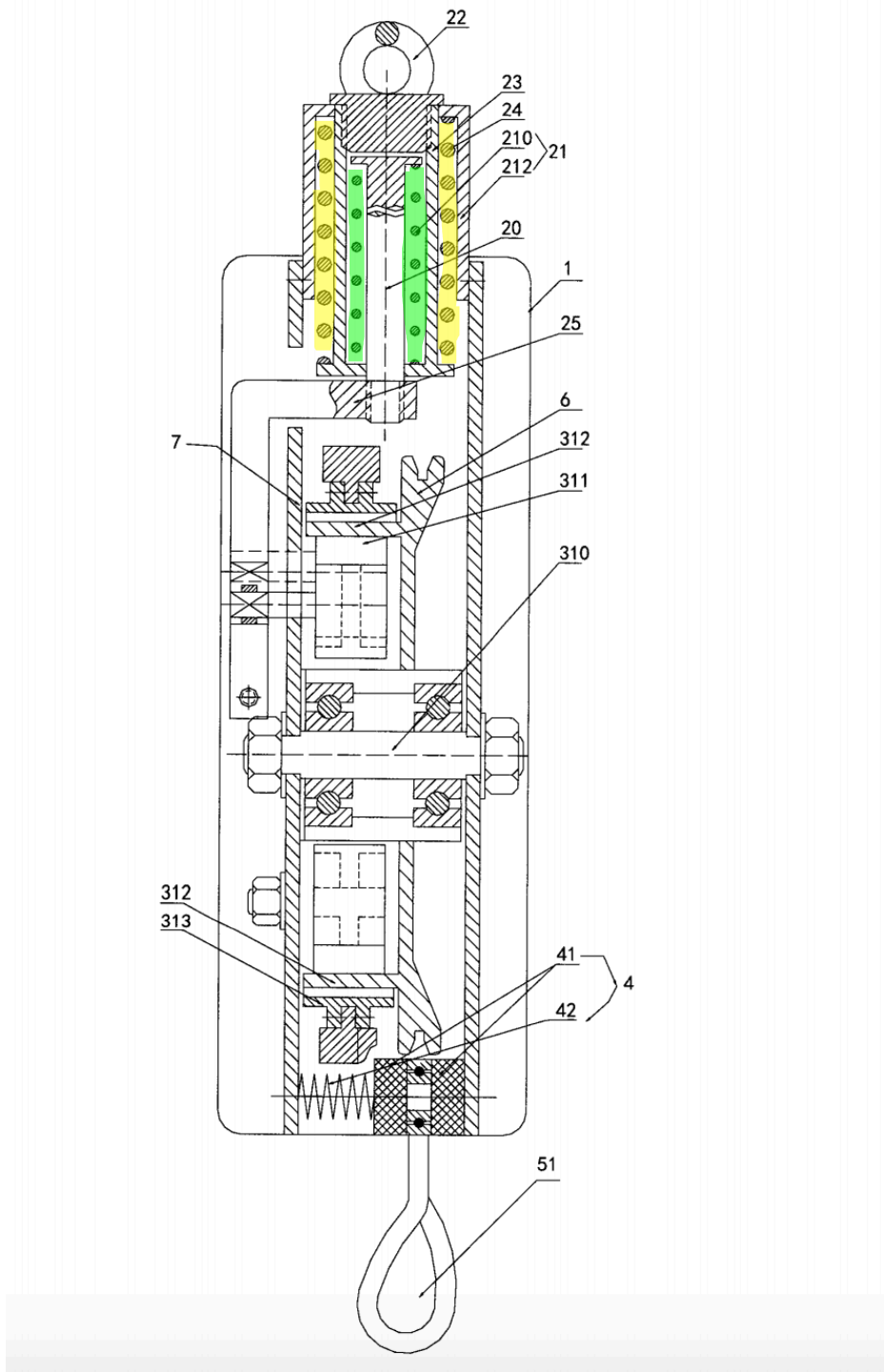
图 2

引證2

CN103127627A
一种双制动往返可控式缓降器

申 請 日 ： 2013-01-30

公 告 日 ： 2013-06-05



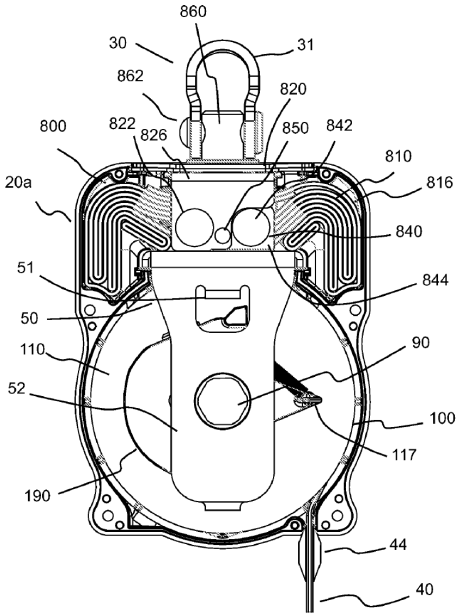
引證3

US20120205478A1

RETRACTING LIFELI
SYSTEMS FOR USE I
TIE-BACK ANCHORI

申請日：2011-04-06

公告日：2012-08-16



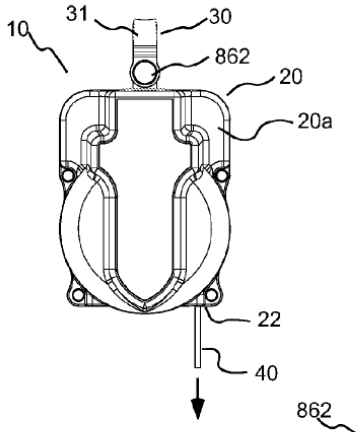


Figure 2A

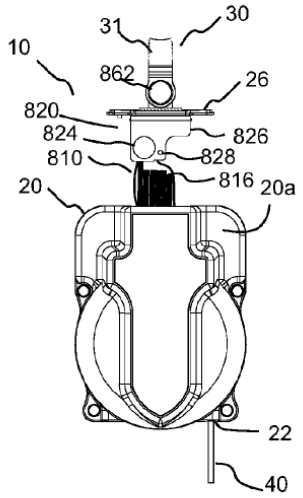


Figure 2B

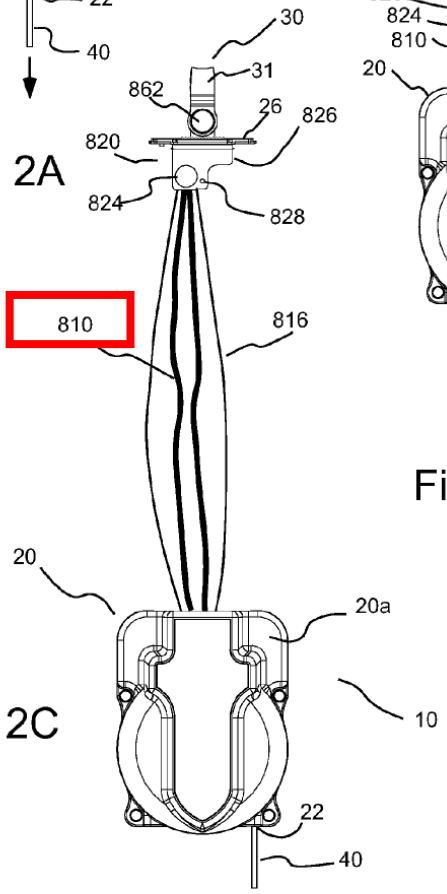


Figure 2C

專利要件分析

新穎性 / 進步性

Claim 1

請求項	引證1	結果
An axial buffer device, comprising:		不具新穎性
a buffer rod, including a first friction surface; and	T型拉桿（4）	
a buffer member, including a second friction surface which contacts the first friction surface; when any one of the buffer rod and the buffer member is pulled by a force which is greater than a default value to overcome a maximum friction between the buffer member and the buffer rod, the buffer member would slide on the buffer rod with friction.	圓筒（1） 所述圓筒1的內腔設有T型拉桿4	

Claim 1 有效性意見

- 一緩衝柱，包含第一摩擦面
  - 引證1揭示一種T型拉桿，相當於本案中之緩衝桿雖未明確指出該T型拉桿具有一第一摩擦面，但參考本案說明書之教示，該第一摩擦面實為該緩衝桿之側面，引證1之T型拉桿並未強調其表面不具摩擦力，又物體之表面均具有摩擦力，因此T型拉桿之側面亦為一摩擦面，足以證明引證1實則揭露該第一摩擦面。
- 一緩衝單元，包含一第二摩擦面
  - 引證1揭示一種圓筒，其作用相當於本案中之緩衝單元，且理由同上，其並未針對圓筒之表面做特殊處理使其摩擦力減小，足以證明引證1實則揭露該第二摩擦面。
- 該第二摩擦面與該第一摩擦面相接
  - 引證1揭示所述圓筒1的內腔設有T型拉桿4，且參照圖示實則為本項之下位概念。

Claim 2, 3

請求項	引證1	結果
2. The axial buffer device of claim 1, further comprising a first spring, wherein the first spring is connected to the buffer rod to provide an elastic force to the buffer rod.	所述彈性體5為預壓彈簧	不具新穎性
3. The axial buffer device of claim 2, wherein the first spring is fit around the buffer rod; one of two ends of the first spring is adapted to connect to the buffer rod, and another one of the two ends of the first spring is adapted to connect to the buffer member.	T型拉桿4的端部與圓筒1的內壁之間設有彈性體5	不具新穎性

Claim 2, 3 有效性意見

- 一第一彈簧
  - 引證1揭示其彈性體5為預壓彈簧。
- 該第一彈簧與緩衝柱相接
- 該第一彈簧一端與緩衝柱相接，另一端與緩衝單元相接
  - 引證1揭示T型拉桿4的端部與圓筒1的內壁之間設有彈性體5，圖2揭示該彈性體之一端與圓筒1相接，另一端與T型拉桿相接

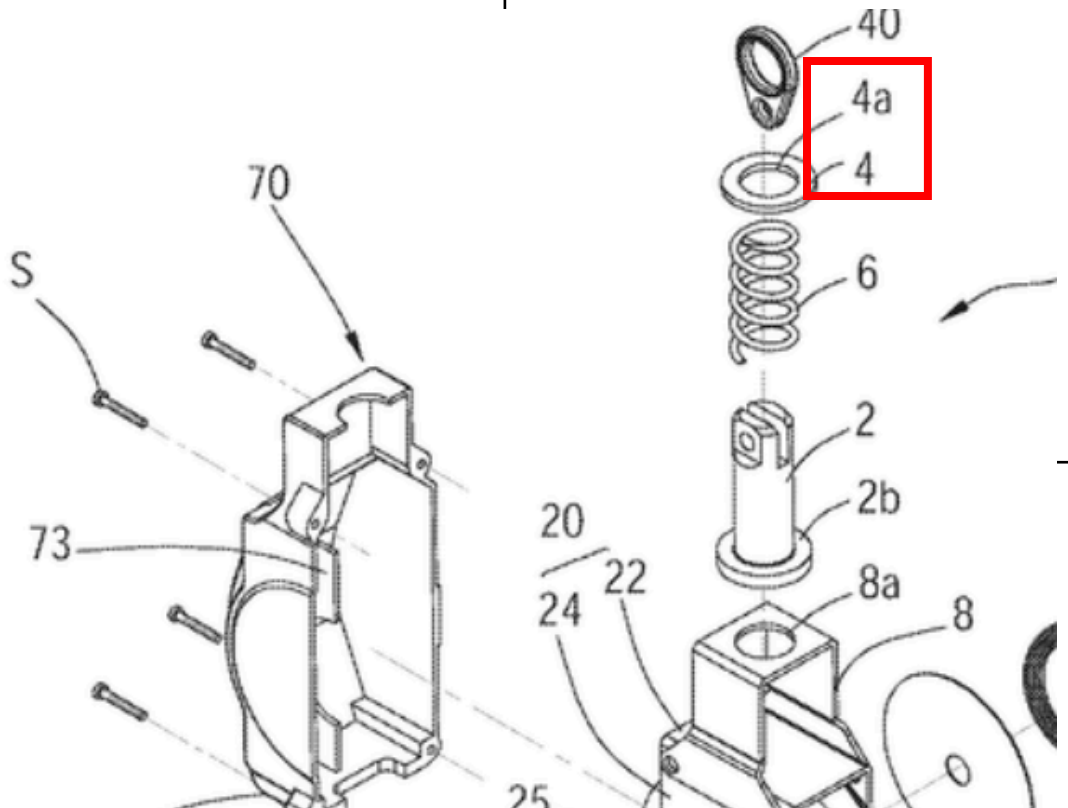
Claim 4

請求項	引證1	引證2	結果
4. The axial buffer device of claim 3, further comprising a second spring, wherein the second spring is fit around the buffer rod and interposed between the first spring and the buffer rod; one of two ends of the second spring is adapted to connect to the buffer rod, and another one of the two ends of the second spring is adapted to connect to the buffer member.	未揭露	圖1、圖2揭露一第二彈簧圍繞緩衝柱設置，且位於第一彈簧與緩衝柱之間	不具進步性

Claim 4 有效性意見

- 本請求項依附於請求項1，並揭示一第二彈簧，可安設於該第一彈簧及該緩衝柱間
- 於引證2揭露一第二彈簧圍繞緩衝柱設置，且設置於第一彈簧與緩衝柱之間
- 結合之動機
  - 引證1及引證2皆為安全防護領域之專利，所屬技術領域具有通常知識者自當有動機結合此兩件引證。

Claim 5

請求項	引證1	習知技術	結果
5. The axial buffer device of claim 1, wherein an outer peripheral surface of the buffer rod forms the first friction surface; a through hole is disposed on the buffer member and includes an inner peripheral surface which forms the second friction surface; a fitting relation between the second friction surface and the first friction surface is an interference fit.		墊片 	不具進步性

Claim 5 有效性意見

- 本請求項依附於請求項1，並揭示該緩衝單元具有一可穿透之洞
- 於引證1以及引證2皆未揭露
- 但所屬技術領域具有通常知識者可根據引證1加上一墊片輕易實現

Claim 6

請求項	引證1	習知技術	結果
6. The axial buffer device of claim 1, wherein the buffer member comprises a holder and a first buffer ring; the first buffer ring and the buffer rod are disposed within the holder; the first buffer ring is fit around the buffer rod and includes the second friction surface.	圓筒（1） 在所述圓筒（1）的內腔設有T型拉桿（4）	墊片	不具進步性

Claim 6 有效性意見

- 本請求項依附於請求項1，並揭示該緩衝單元具有一第一環與一支架
- 引證1揭示一圓筒，且所屬技術領域具有通常知識者可根據引證1所揭示之圓筒加上一墊片輕易實現此技術特徵

Claim 7

請求項	引證1	結果
7. The axial buffer device of claim 6, further comprising a first spring, wherein the first spring is fit around the buffer rod; one of two ends of the first spring is adapted to connect to the buffer rod, and another one of the two ends is adapted to connect to the first buffer ring.	彈性體5為預壓彈簧 T型拉桿4的端部與圓筒1的內壁之間設有彈性體5	不具進步性

Claim 7 有效性意見

- 本請求項依附於請求項1，並揭示一第一彈簧環繞於該緩衝柱之外，一端與該緩衝柱相接，另一端與該緩衝元件中之該第一緩衝環相接
- 引證1揭示一彈簧，該彈簧之一端與T型拉桿（相當於緩衝柱），另一端與圓筒（所屬技術領域者可簡單置換於緩衝元件）相接。

Claim 8

請求項	引證1	引證2	結果
8. The axial buffer device of claim 7, further comprising a second spring, wherein the second spring is fit around the buffer rod and interposed between the first spring and the buffer rod; one of two ends of the second spring is adapted to connect to the buffer rod, and another one of the two ends of the second spring is adapted to connect to the first buffer ring.	未揭露	未揭露	具新穎性及進步性

Claim 8 有效性意見

- 本請求項依附於請求項7，並揭示一第二彈簧環繞於該緩衝柱並介於該緩衝柱與該第一彈簧之間，一端與該緩衝柱相接，另一端與該緩衝元件中之該第一緩衝環相接
- 於引證2揭露一第二彈簧圍繞緩衝柱設置，且設置於第一彈簧與緩衝柱之間
- 結合之動機
  - 引證1及引證2皆為安全防護領域之專利，所屬技術領域具有通常知識者自當有動機結合此兩件引證。

Claim 9

請求項	引證1	引證2	結果
9. The axial buffer device of claim 6, wherein the buffer member further comprises a second buffer ring; the second buffer ring is fit around the buffer rod and includes a third friction surface which faces the first friction surface of the buffer rod; the axial buffer device further comprises a first spring and a second spring; the first spring is fit around the buffer rod and disposed between the first buffer ring and the second buffer ring; two ends of the first spring respectively connect to the first buffer ring and the second buffer ring; the second spring is fit around the buffer rod; two ends of the second spring respectively connect to the second buffer ring and the buffer rod.	未揭露	未揭露	具新穎性及進步性

Claim 9 有效性意見

- 本請求項依附於請求項6，並揭示一第二緩衝環具有第三摩擦面，
- 於引證1、引證2以及引證3均未揭露
- 且非所屬技術領域具有通常知識者可根據引證1、引證2以及引證輕易實現之。

Claim 10, 11

請求項	引證1	引證2	結果
10. The axial buffer device of claim 1, further comprising another buffer rod, wherein the two buffer rods are disposed coaxially; the buffer member includes a holder, a first buffer ring and a second buffer ring; the two buffer rods, the first buffer ring and the second buffer ring are disposed within the holder; the first buffer is fit around the buffer rod and includes the second friction surface; the second buffer ring is fit around the other buffer rod and includes a third friction surface which contacts a fourth friction surface on the other buffer rod.	未揭露	未揭露	具新穎性及進步性
11. The axial buffer device of claim 10, further comprising at least one spring, wherein the at least one spring is fit around one of the two buffer rods.	未揭露	未揭露	具新穎性及進步性

Claim 10, 11 有效性意見

- 請求項10依附於請求項1，揭示一其他緩衝裝置，與原先之緩衝裝置同軸相接
- 請求項11依附於請求項10，揭示一彈簧，環設於該緩衝柱之外。
- 於引證1、引證2以及引證3均未揭露
- 且非所屬技術領域具有通常知識者可根據引證1、引證2以及引證輕易實現之。

Claim 12

請求項	引證1	引證3	結果
12. A fall protection device including an axial buffer device as in claim 1 and adapted to connect to a safety belt, further comprising: a frame; and a rotation member disposed in the frame and adapted to roll up the safety belt; wherein one of the buffer rod and the buffer member is adapted to connect to a hanging point, and the another one is adapted to connect to the frame.	令Claim 1不具新穎性	an energy absorbing system positioned at least partially within the housing a frame a hub to which the lifeline is attached at a first end of the lifeline and around which the lifeline is coiled within the housing a first retaining member and a second retaining member	不具進步性

Claim 12 有效性意見

- 本請求項為獨立項，揭示一防墜器包含請求項1所述之該軸向緩衝裝置。
- 請求項1所述之該軸向緩衝裝置於引證1當中揭露。
- 引證3揭示一能量緩衝裝置（相當於軸向緩衝裝置）與防墜器之結合、一支架、一位於支架內之旋轉單元以及該能量緩衝裝置介於掛勾點與支架間。
- 結合之動機
  - 引證1與引證3均屬安全防護相關領域，所屬技術領域具有通常知識者自當有動機結合此兩件引證。

Claim 13

請求項	引證3	結果
13. The fall protection device of claim 12, further comprising a brake unit and a housing, wherein the brake unit is disposed on the rotation member to restrict a rotation of the rotation member;	a braking mechanism (105) housing (20) braking base (112) that is connected to hub plate (110) by screws (150)	具新穎性及進步性
the housing includes a first half housing and a second half housing which are opposite and joined to each other;	two halves (20a) and (20b) 圖示中有揭露	
a first division plate is disposed in the first half housing and a second division plate is disposed in the second half housing which is opposite to the first division plate; the rotation member is disposed in one part of the housing which is at one side of the first division plate and the second division plate, and the brake unit is disposed in another part of the housing which is at another side of the first division plate and the second division plate.	未揭露	

Claim 13 有效性意見

- 本請求項依附於請求項12，並揭示一與轉動單元相接之煞車單元以及一外殼，該外殼可分為兩部分，並且分別設有一分隔部，該分隔部用於分隔該煞車單元與該轉動單元
- 引證3揭示一煞車單元與可分成兩部分之外殼，未揭露設置於外殼上之分隔部。

Claim 14

請求項	引證3	結果
14. The fall protection device of claim 13, wherein the rotation member includes a shaft lever and a rotary drum;	shaft (70) hub (100)	具新穎性及進步性
the brake unit is mounted on the shaft lever;	未揭露	
the rotary drum is fit around the shaft lever to be rotated with the shaft lever coaxially.	Shaft (70) is rotationally locked to hub plate (110)	

Claim 14 有效性意見

- 本請求項依附於請求項13，揭示該轉動單元包括一轉軸以及一轉鼓，該煞車單元設置於該轉軸上，且該轉鼓被配置為與該轉軸同軸旋轉。
- 引證3揭示轉軸以及轉鼓，且同時揭示該轉軸被配置為可與轉鼓同軸旋轉，未揭露煞車單元設置於轉軸上。

Claim 15

請求項	引證1	引證3	結果
15. The fall protection device of claim 14, wherein a fitting relation between the rotary drum and the shaft lever is an interference fit.	未揭露	未揭露	具新穎性及進步性

Claim 15 有效性意見

- 本請求項依附於請求項14，揭示該轉軸與轉鼓之相接為干涉配合（緊配合）。
- 引證1與引證3皆未揭露。
- 有非預期之功效
  - 該干涉配合可提供一額外之緩衝效果