# 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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# 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

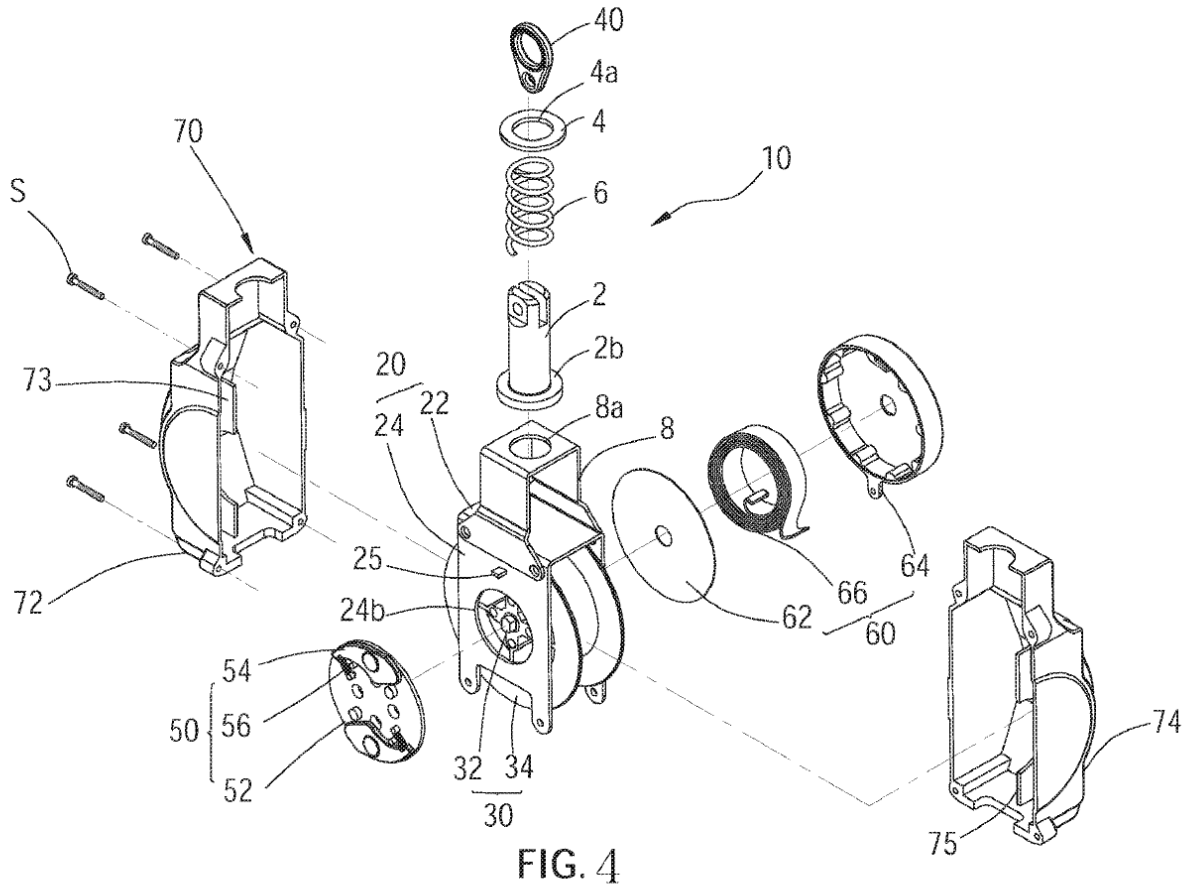



FIG. 4

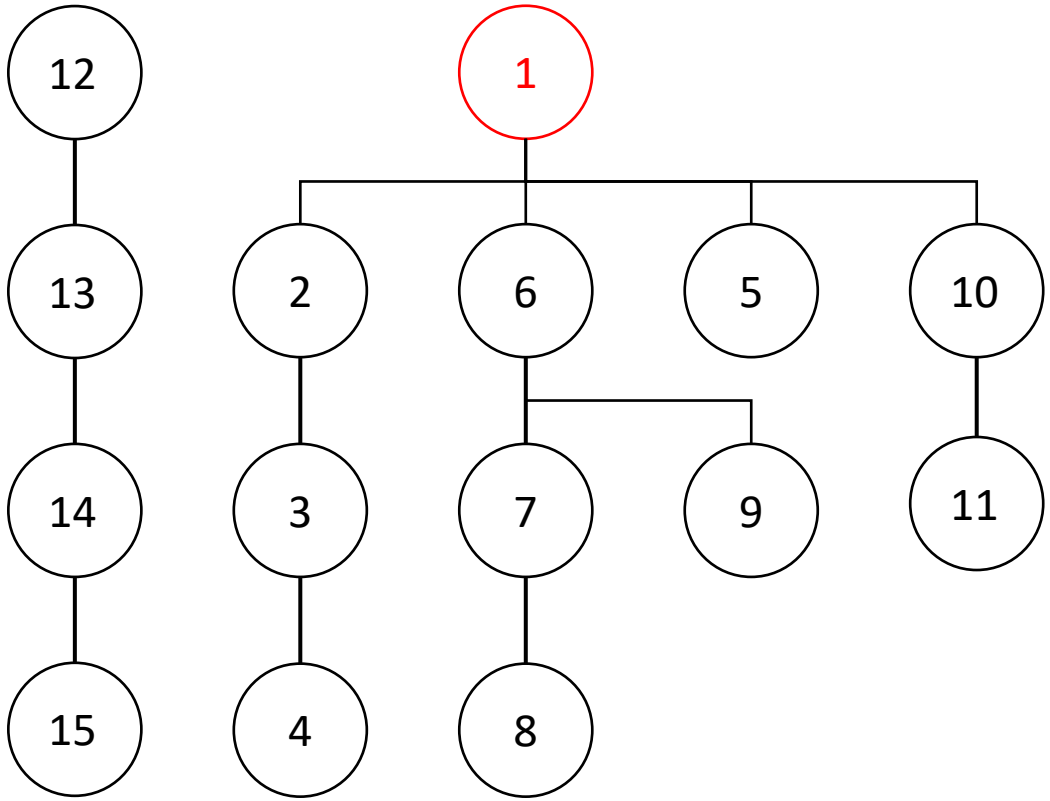
# 申請專利範圍

## 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.

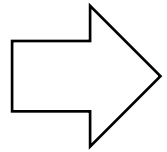


# 檢索策略

# 前案檢索

專利名稱、摘要、申請專利範圍

TAC/(SRL相關關鍵字)
AND TAC/(鎖定關鍵字)
AND TAC/(回捲關鍵字)
AND TAC/(緩衝關鍵字)



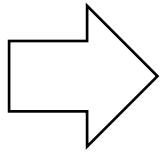
37案
37專利家族

檢索日期：2020/3/6
檢索資料庫：Patent Cloud

# 前案檢索

專利名稱、摘要、申請專利範圍

TAC/（SRL相關關鍵字）
AND TAC/（緩衝關鍵字）
AND TAC/（彈簧）



318案
297專利家族

檢索日期：2020/3/6
檢索資料庫：Patent Cloud

# 引證文件

# TWM547399U
## 具緩衝功能的防墜器

申 請 日 ：２０１７-０６-０１

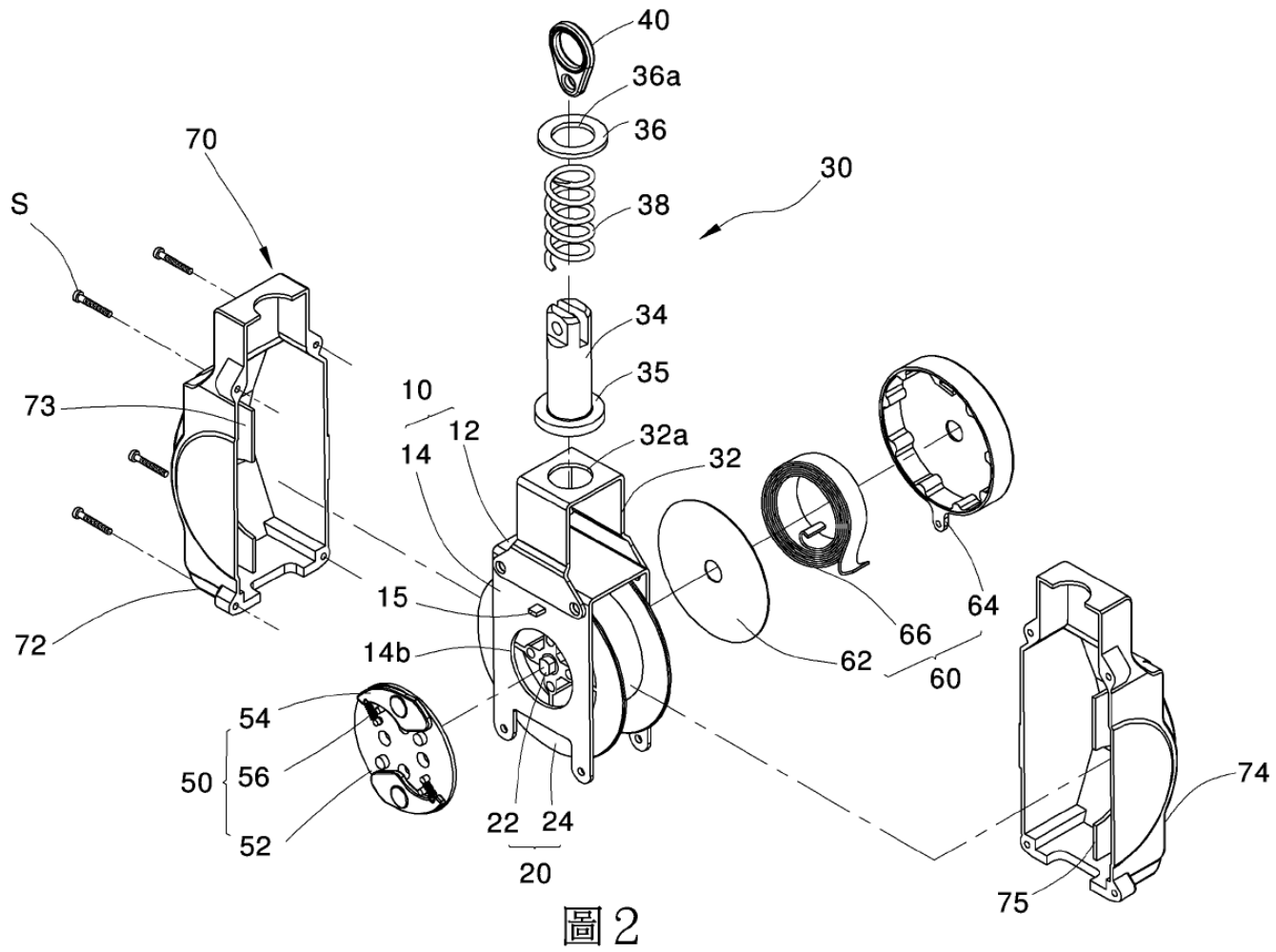



圖 2

# CN203777544U

## 坠落防护缓冲装置

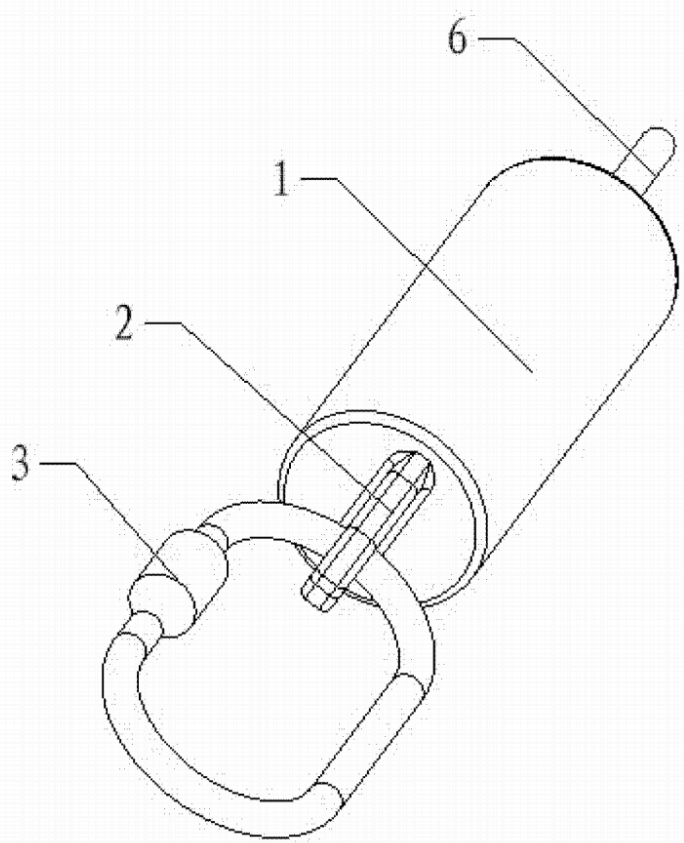



图 1

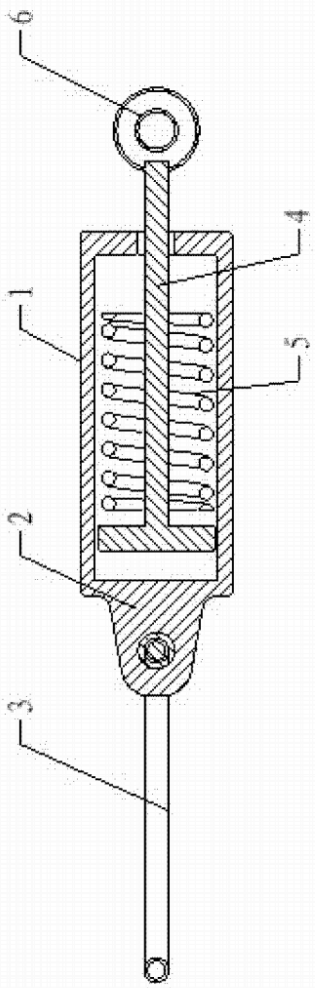



图 2

# 專利要件分析

新穎性 / 進步性

# Claim 1

| | 引證1 | 結果 |
|---|---|---|
| An axial buffer device, comprising:<br>a buffer rod, including a first friction surface; and<br>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. | 一緩衝裝置，包括一緩衝柱以及一緩衝件，該緩衝柱供與一錨定點連接，且該緩衝柱具有一第一摩擦面，該緩衝件設置於該架體，且該緩衝件具有一第二摩擦面與該第一摩擦面相配合； 其中，當該安全帶所承受之拉力大於一預定值時，該安全帶拉動該架體，使連接於該架體上的該緩衝件克服與該緩衝柱之間的最大靜摩擦力，使得該緩衝件與該緩衝柱之間產生摩擦滑動。 | 不具新穎性 |

# 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. | 如請求項1所述之具緩衝功能的防墜器，其中該緩衝裝置包括有一彈簧，與該緩衝柱連接，用以提供該緩衝柱一彈力。 | 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. | 如請求項2所述之具緩衝功能的防墜器，其中該彈簧具有兩端，其一端抵於該緩衝柱上，另一端抵於該緩衝件上。 | 不具新穎性 |

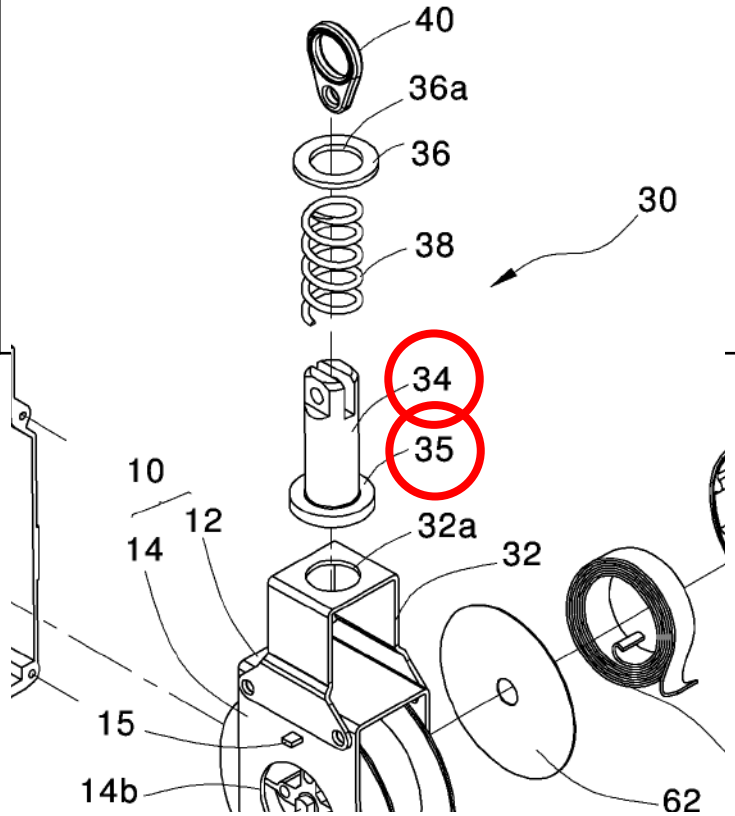
# Claim 4

| 請求項 | 引證1 | 引證2 | 結果 |
| --- | --- | --- | --- |
| 4. The axial buffer device of claim 3, further comprising a second spring,<br>wherein the second spring is fit around the buffer rod and interposed between the first spring and the buffer rod;<br>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 | 为解决上述技术问题，本实用新型的技术方案是：一种坠落防护缓冲装置，具有中空的圆筒，在所述圆筒的一端设有与圆筒连为一体的伸出端部，在所述伸出端部铰接有用于捆绑缓冲带的拉环.....<br>进一步的，作为一种具体的实施方式，本实用新型中所述弹性体为预压弹簧 | 具新穎性及進步性 |

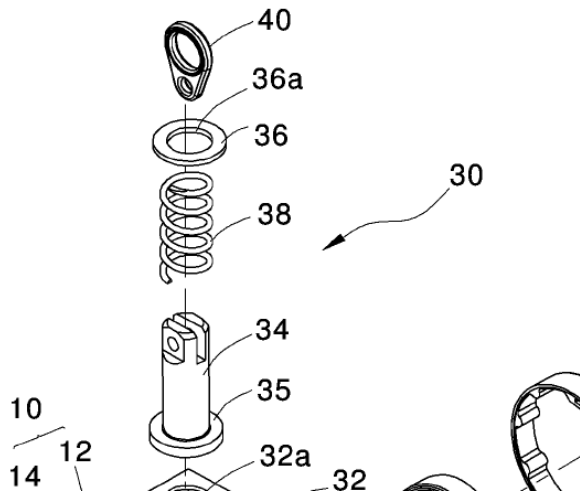
# Claim 5

| 請求項 | 引證1 | 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. | 如請求項1所述之具緩衝功能的防墜器，其中該緩衝柱的外周面構成該第一摩擦面；該緩衝件具有一穿孔，該穿孔的內周面構成該第二摩擦面。 | 不具新穎性 |

# Claim 6

| 請求項 | 引證1 | 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. |  | 不具新穎性 |

# 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. |  | 不具新穎性 |

# 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 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 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 12

| 請求項 |
| --- |
| 12. A fall protection device including an axial buffer device as in claim 1 and adapted to connect to a safety belt, further comprising:<br><br>a frame; and<br><br>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. |

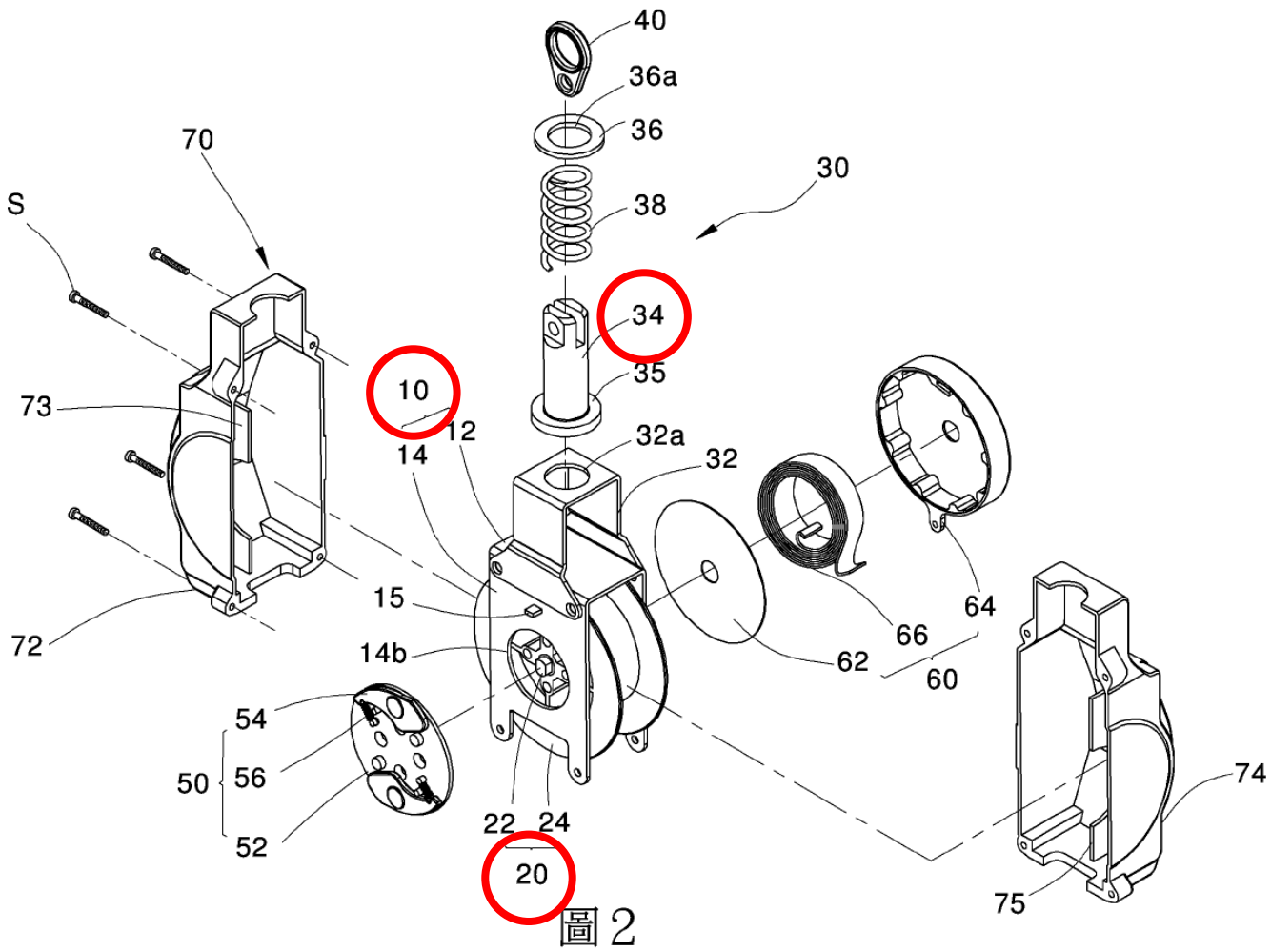


圖 2

# Claim 13

| 請求項 |
| --- |
| 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; the housing includes a first half housing and a second half housing which are opposite and joined to each other; 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. |

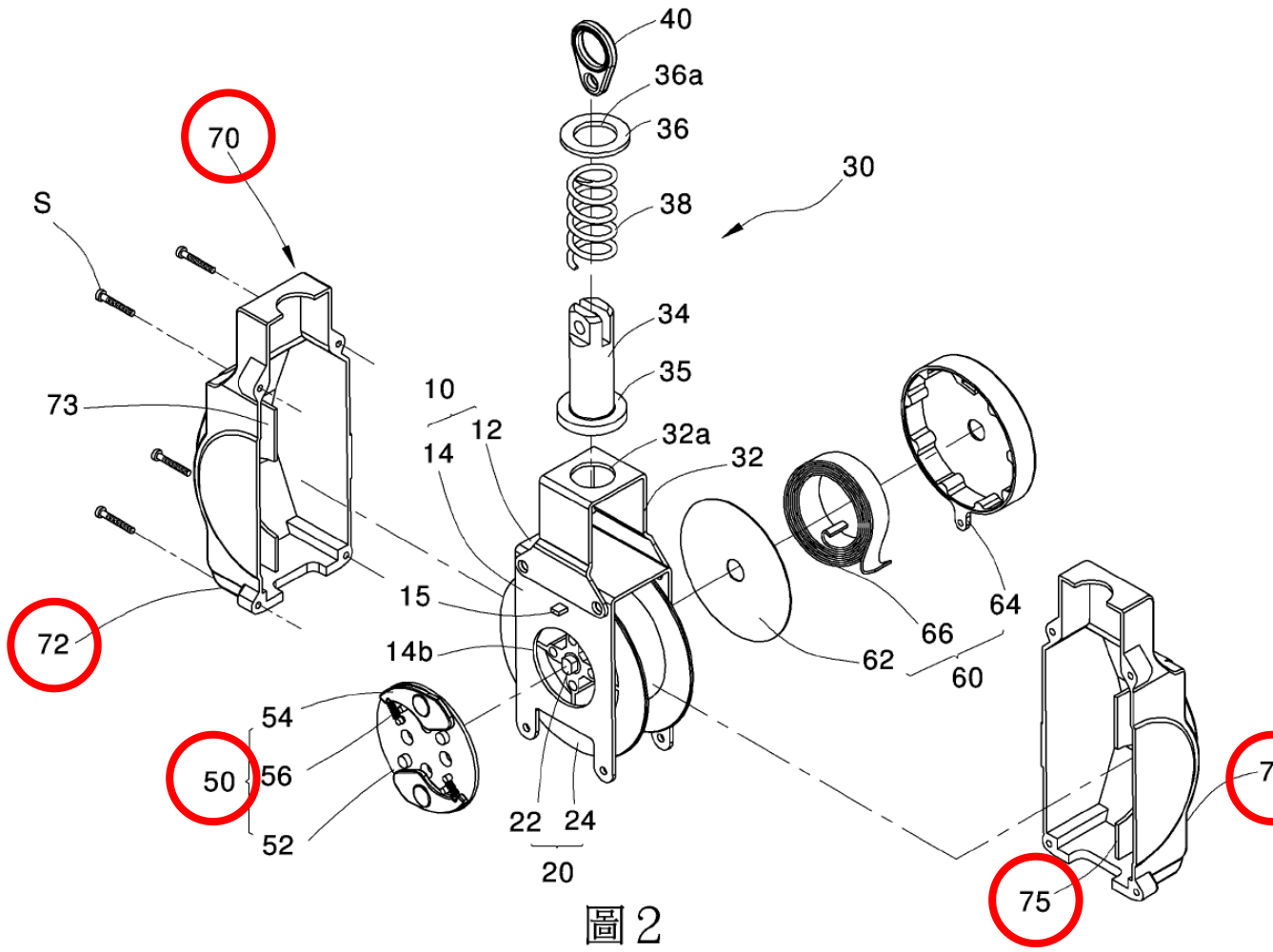
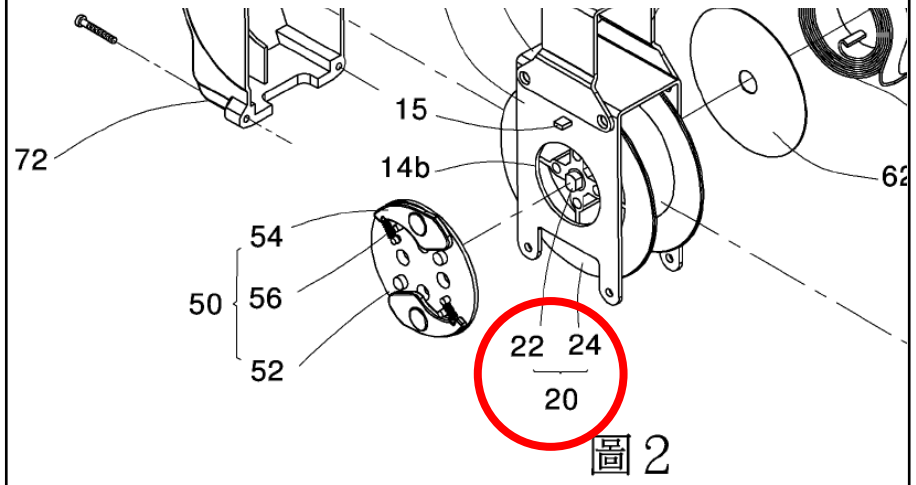


圖 2

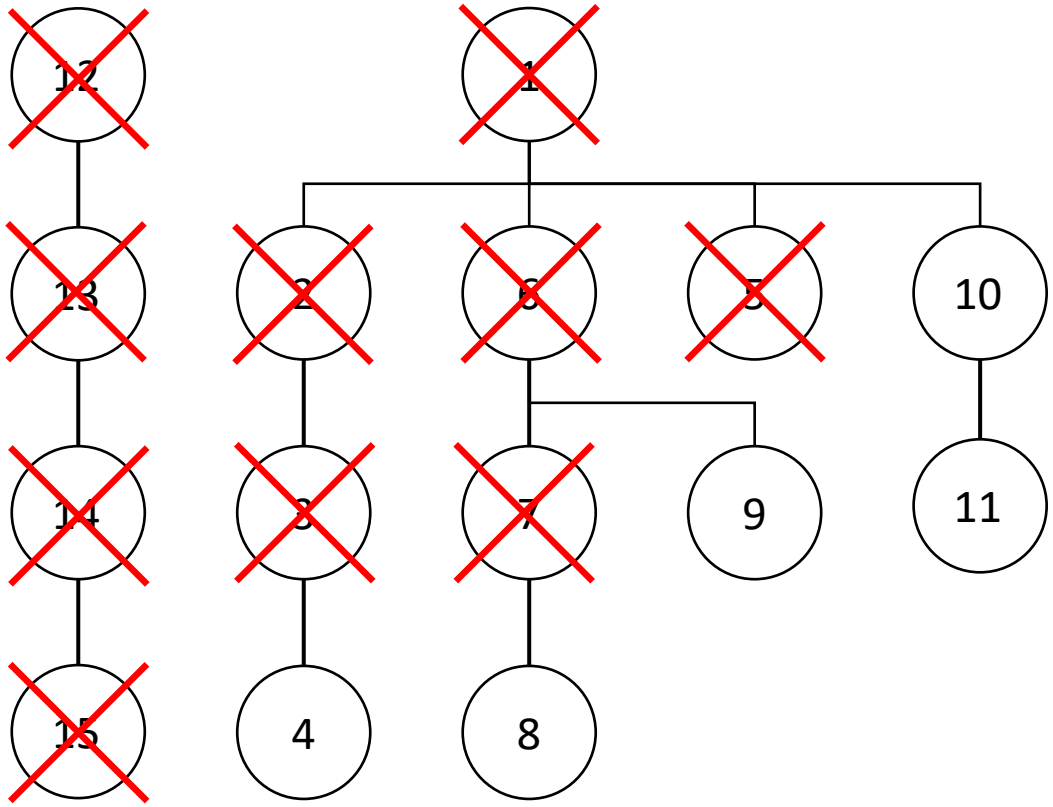
# Claim 14

| 請求項 | 引證1 | 結果 |
| --- | --- | --- |
| 14. The fall protection device of claim 13, wherein the rotation member includes a shaft lever and a rotary drum; the brake unit is mounted on the shaft lever; the rotary drum is fit around the shaft lever to be rotated with the shaft lever coaxially. |  <br>圖 2 | 不具進步性 |

# Claim 15

| 請求項 | 引證1 | 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. | 於一實施例當中，該轉鼓24與該軸桿22為緊配合，例如可以是選擇性地採留隙配合（Clearance Fit）、過渡配合（Transition Fit）或過盈配合（Interference Fit）之緊配合設計，藉以在軸桿22停止轉動時，透過轉鼓24與軸桿22為緊配合之設計，該轉鼓24與軸桿22之間產生轉動摩擦力，從而可緩衝安全帶26被拉伸而下降的速度以及連接有安全帶之工作人員的下降速度。 | 不具進步性 |

# 結論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