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本国际公布:

— 包括国际检索报告(条约第 21 条(3))。

(54) Title: ENERGY STORAGE APPARATUS USING SPRING TORSION

(54) 发明名称: 以弹簧扭力储存能量的储能装置

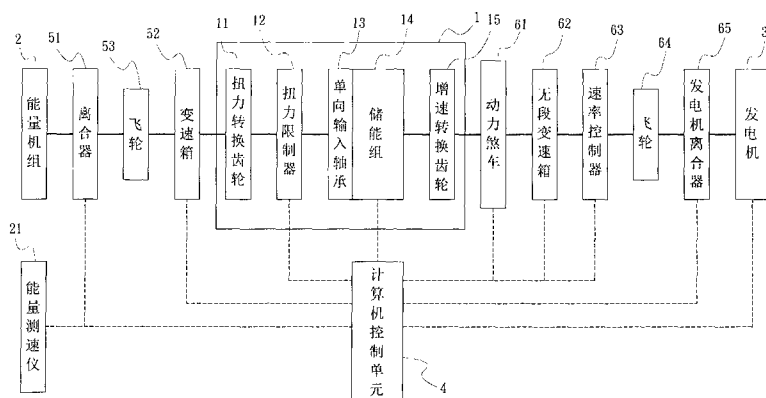


图 3 / FIG.3

- | | |
|-----------------------------|-------------------------------|
| 2 Power station | 51 Clutch |
| 3 Generator | 52 Transmission |
| 4 Computer controlling unit | 53 Flywheel |
| 11 Torsion-converting gear | 61 Power brake |
| 12 Torsion limiter | 62 Non-sectional transmission |
| 13 One-way input bearing | 63 Speed controller |
| 14 Energy storage set | 64 Flywheel |
| 15 Accelerating gear | 65 Generator clutch |
| 21 Energy speed sensor | |

(57) Abstract: An Energy storage apparatus (1) using spring torsion for converting the power generated by an energy generating apparatus to the energy stored in the form of spring energy, comprises a torsion-converting gear (11) connected to the energy resource and converting the energy to torsion for output. The output side of the torsion-converting gear (11) is connected to a torsion limiter (12) for blocking over-torsion to the following structures and preventing damages. The output side of the torsion limiter (12) is connected to a one-way input bearing (13) for transmitting the torsion unidirectionally to the following structures and preventing the outputted torsion from transmitting backwards to damage the structures aforementioned. The output side of the one-way input bearing (13) is connected to an energy storage set (14) formed with at least two coaxially connecting swivel discs (142, 143). A torsional spring (141) is wound between the two adjacent swivel discs (142, 143) and the end of the torsional spring (141) is bended in opposite to the winding direction, so that the torsional spring (141) could be bended and wound

twice to increase the rotary torsion when the disc (142) rotates. The output side disc (143) of the energy storage set (14) is connected to an accelerating gear (15) for outputting the energy after the rotary torsion is accelerated. The energy storage set (14) could be in serial or parallel configuration so the efficiency of the storage and usage of the energy is improved.

(57) 摘要:

[见续页]

一种以弹簧扭力储存能量的储能装置（1），用于将一能量产生装置所生成的动力转成弹簧式的能量形式储存，其具有一扭力转换齿轮（11），用来连接能量来源并转换为扭力进行输出，该扭力转换齿轮（11）的输出端连接有扭力限制器（12），以阻断过大扭力输入后述结构以免造成损坏，该扭力限制器（12）的输出端连接有单向输入轴承（13），以将扭力朝单一方向传输至后述结构，并防止输出后的扭力逆向输出而损坏前面结构，而在该单向输入轴承（13）的输出端连接有储能组（14），该储能组（14）由至少二转盘（142、143）同轴连接形成，该相邻的二转盘（142、143）之间绕设有扭力弹簧（141），且该扭力弹簧（141）的末端与绕设方向反向弯折设置，使该转盘（142）旋转时，该扭力弹簧（141）会进行二次弯折绕设而增加其旋转扭力，以及该储能组（14）的扭力输出端转盘（143）连接有增速转换齿轮（15），用来将旋转扭力增速以进行能量输出，该储能组（14）更可采用串/并联方式设置，以增加能量储存与使用的效率。