

Abstract

A Hoisting System With Energy Recovering Mechanism

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The present disclosure involves a hoisting system 400. Preferably, the system 400 comprises a receptacle 433 of a defined load and movable between a first position and a second position, which is a position having greater gravitational potential energy than the first position; a hoist assembly 480 comprising an winch motor 483, a drum 484 wound with a
10 cable 486 having one end secured to the receptacle 433 and another end affixed to the drum 484, and a gear mechanism 488 interfacing the winch motor 483 to the drum 484 for driving the defined load to move toward to or away from the second position by respectively winding the cable 486 onto the drum 484 or unwinding the cable 486 from the drum 484; a primary power source 496 for supplying an electrical current to the winch motor 483 to drive the
15 drum 484 and move the defined load; and a frequency conversion unit 495 configured to vary the frequency and/or magnitude of the electrical current supplied to the winch motor 483 thereby regulating power output of the winch motor 483 in moving the defined load, the power output is positively correlated to the defined load. To recover the gravitational potential energy from the descending load, the system 400 is incorporated with an energy
20 converting unit 490 detachably engaged to the hoist assembly 480; and a power storage member 540 connecting to the energy converting unit 490 to store the recovered potential energy and being fashioned to discharge the stored energy to at least partially power the hoist assembly 480 to move the defined load from the first position to the second position, through the energy converting unit 490, in addition to the primary power source 496.

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(Most illustrated by FIG. 3)