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(54) **DEVICE FOR CONVEYING PEOPLE AND/OR GOODS**

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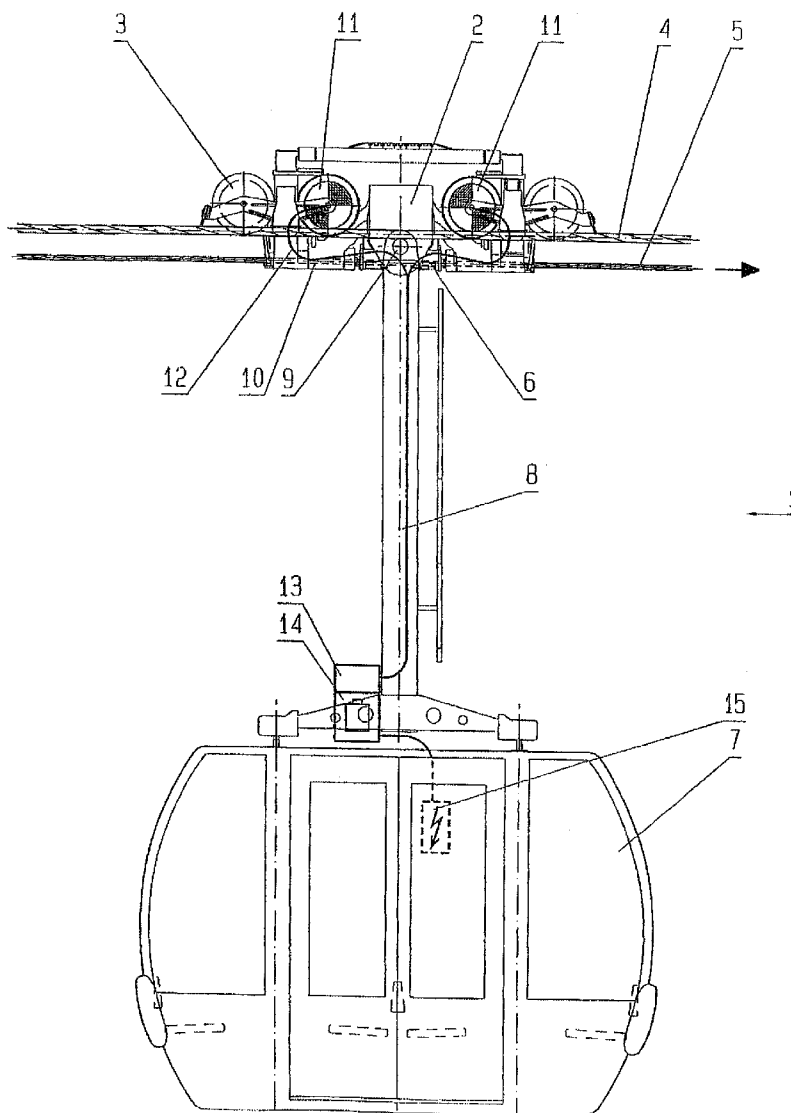
(57) **ABSTRACT**

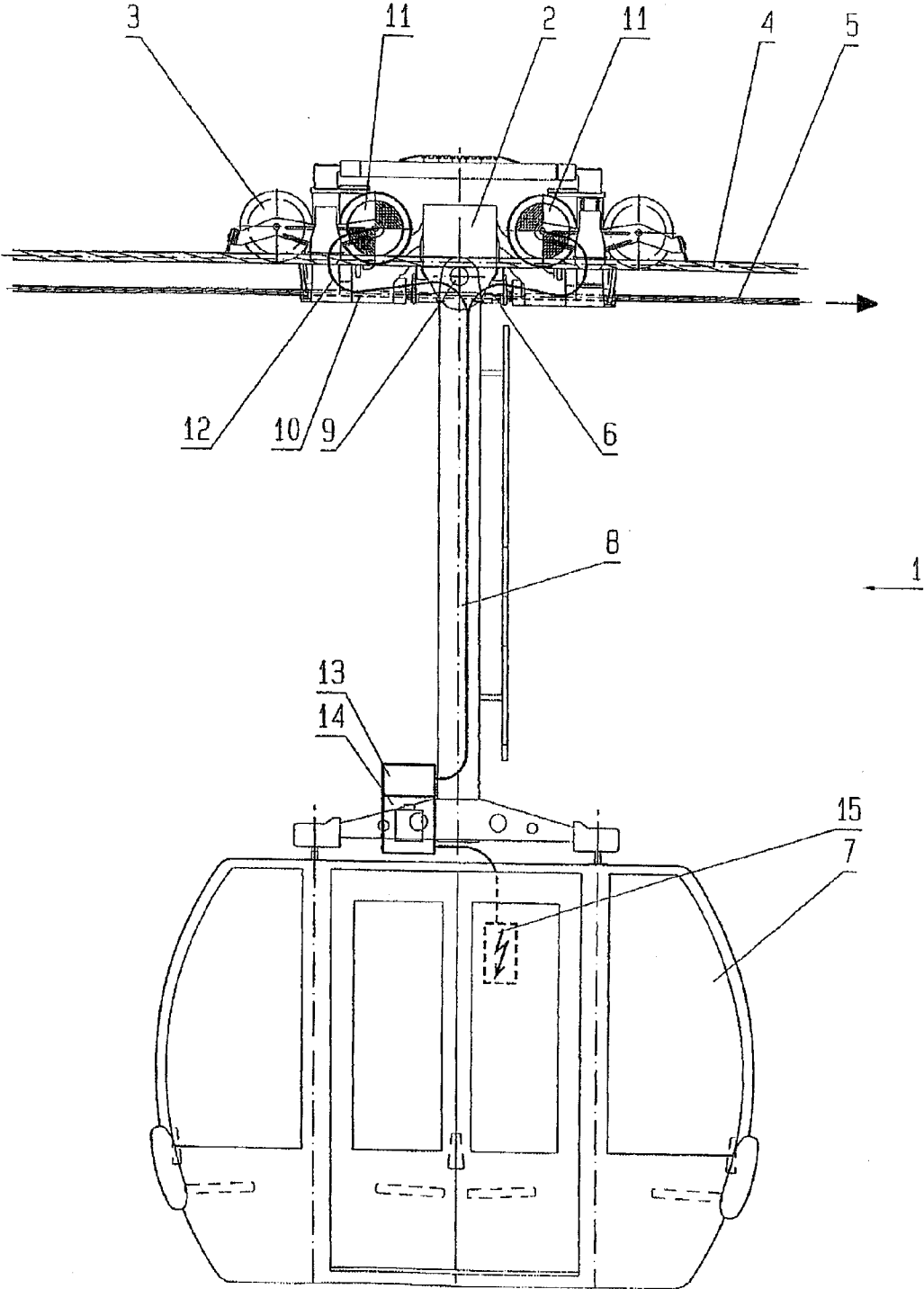
A device for conveying people or other objects, for example a car of an aerial cableway or a cable railroad, has a driveless running gear, which is pulled along a track cable. The car has consumers for electrical energy and an electrical energy storage device. Electrical energy is obtained by friction wheels on the running gear. The friction wheels are connected to a generator. The electrical energy is stored in the electrical energy storage device.

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**DEVICE FOR CONVEYING PEOPLE AND/OR GOODS**

**CROSS-REFERENCE TO RELATED APPLICATION**

**[0001]** This application claims the priority, under 35 U.S.C. § 119, of Austrian patent application A 702/2007, filed May 7, 2007; the prior application is herewith incorporated by reference in its entirety.

**BACKGROUND OF THE INVENTION**

**Field of the Invention**

**[0002]** The invention relates to a device for conveying people and/or other objects with a driveless running gear, which is pushed or pulled along a travel way, with at least one consumer for electrical energy and with an electrical energy storage device.

**[0003]** Such devices are, for example, cars of aerial cableways and funicular railroads. Since the running gears of the cars of aerial cableways and funicular railroads do not have dedicated drives since they are pulled with the aid of cables, they do not necessarily have an external electrical energy supply. While an electrical energy supply to aerial cableways on the section between the cableway stations is virtually impossible, this would be possible in the case of funicular railroads, but is associated with considerable complexity since a busbar would need to be provided along the entire section in order to permanently supply electrical energy externally to electrical consumers.

**[0004]** In the context of the invention, electrical consumers can be multimedia devices, lighting systems, drives for car doors, measuring devices, motors for rotating cars, devices for active pendulum damping, drives for active moving gears for cornering, air-conditioning units or heating devices, for example seat heaters or floor heaters. This list is by way of example only and it is not complete.

**[0005]** Although it is known from the prior art to equip cars of cableways with electrical energy storage devices such as rechargeable batteries in order to supply current to electrical consumers within the section, these energy storage devices need to be designed to be relatively large in the case of consumers with a relatively high power rating and the charging power in the stations needs to be likewise very great in particular in the case of short stops, which can only be realized in a technically relatively complex manner.

**BRIEF SUMMARY OF THE INVENTION**

**[0006]** It is accordingly an object of the invention to provide a transport device, which overcomes the above-mentioned disadvantages of the heretofore-known devices and methods of this general type and which renders it possible to ensure power supply to electrical consumers in a technically simple manner.

**[0007]** With the foregoing and other objects in view there is provided, in accordance with the invention, a conveying device, comprising:

**[0008]** a driveless running gear configured to be pushed or pulled along a travel way;

**[0009]** an electrical energy storage device connected to and traveling with said running gear along said travel way;

**[0010]** at least one consumer for electrical energy connected to said electrical energy storage device; and

**[0011]** an apparatus for obtaining electrical energy from a relative movement between said running gear and said travel

way and for storing the electrical energy obtained thereby in said electrical energy storage device.

**[0012]** In other words, the objects of the invention are achieved in that there is provided an apparatus for obtaining electrical energy from the relative movement between the running gear and the travel way and for storing the energy thus obtained in the electrical energy storage device.

**[0013]** The invention makes use of the fact that, as a result of the relative movement between the travel way, i.e. for example the track cables in the case of aerial cableways or the rails of funicular railroads, and the running gear, energy can be obtained without any problems.

**[0014]** If, in a preferred embodiment of the invention, the running gear runs on the travel way via rollers, a generator can be connected to at least one roller, by means of which generator the electrical energy is obtained. In this case it is only necessary to connect one or more of the rollers which are provided in any case to a generator.

**[0015]** In an alternative, likewise preferred embodiment of the invention, at least one friction wheel is arranged on the running gear, which friction wheel is frictionally connected to the travel way, the friction wheel being connected to a generator. This embodiment provides the advantage that existing and optimized running gear constructions do not need to be altered in terms of the mounting of the running wheels since one or more separate friction wheels are used for driving the generator, which friction wheels are likewise mounted on the running gear.

**[0016]** In the context of the invention, the generator can be a wheel hub generator, which is preferably arranged in the roller or in the friction wheel. Alternatively, the wheel hub generator can also be fitted to the shaft of the roller or the friction wheel.

**[0017]** Other features which are considered as characteristic for the invention are set forth in the appended claims.

**[0018]** Although the invention is illustrated and described herein as embodied in a device for conveying people and/or other objects, it is nevertheless not intended to be limited to the details shown, since various modifications and structural changes may be made therein without departing from the spirit of the invention and within the scope and range of equivalents of the claims.

**[0019]** The construction and method of operation of the invention, however, together with additional objects and advantages thereof will be best understood from the following description of specific embodiments when read in connection with the accompanying drawing.

**BRIEF DESCRIPTION OF THE DRAWING**

**[0020]** The sole FIGURE of the drawing is a diagrammatic side elevation showing a gondola according to the invention in an aerial cableway system.

**DETAILED DESCRIPTION OF THE INVENTION**

**[0021]** The device **1** according to the invention of the exemplary embodiment in accordance with the attached drawing has, as is conventional in the prior art, a running gear **2**, which moves in pendulum fashion or circulates via rollers **3** on a track cable **4** between two cableway stations. The running gear **2** is a passive running gear, i.e., a driveless running gear. In the context of the invention it is naturally also possible for the running gear **2** to run over two track cables **7** which are arranged parallel next to one another. It will be understood that the invention is not restricted to a specific number or arrangement of track cables **4**. The running gear **2** is driven by

way of a pull cable 5 or haulage cable, on which the running gear 2 is fixed by way of a suitable clamping device 6.

[0022] A gondola car 7 is suspended from the running gear 2 with the aid of suspension arm 8, the suspension arm 8 being connected to the running gear 2 via an articulated joint 9 and to the car 7 via suspension means 10, in order that the car 7 always hangs as vertically as possible beneath the running gear 2.

[0023] In addition to the running wheels 3, two friction wheels 11 are mounted on the running gear 2. The friction wheels are frictionally connected to the track cable 4. A wheel hub generator is installed in each of the friction wheels 11. Each wheel hub generator converts the rotary movement of the friction wheels 11 into electrical energy. It would naturally also be possible for generators to be attached to the shafts of the friction wheels 11 or for a common generator to be provided for a plurality of friction wheels 11, which common generator is connected to the friction wheels 11 via mechanical joints or gear mechanisms. Depending on the level of the electrical power to be produced, it is also possible for only one friction wheel 11 or more than two friction wheels 11 to be used in order to optimize the mechanical loading and the wear of the friction wheel(s) 11.

[0024] Electrical lines 12 run from the wheel hub generators along the suspension arm 8 downwards towards a controller 13, which firstly controls the charging of an energy storage device 14, for example an accumulator or a rechargeable battery, and secondly controls the supply to an electrical consumer 15. Via the controller 13, either always the energy storage device 14 can be fed by the generator and the consumers can then be supplied the energy stored in the energy storage device 14, or one or more consumers 15 can be fed directly. A parallel feed to the energy storage device 14 and the consumer 15 is also possible. As an alternative or in addition to for example one or more rechargeable batteries 14, one or more capacitors can also be used as energy storage devices, which capacitors have different properties than rechargeable batteries in terms of the capacity and charging and discharging speed and can therefore have more suitable properties in combination with certain consumers.

[0025] Although the energy drawn via the friction wheels 11 additionally needs to be applied by the main drive, which is used to drive the running gear 2 with the aid of the pull cable 5, the additional power requirement is quite negligible, i.e., it is generally very low in comparison with the main drive power, with the result that it is not expected the main drive will be made more expensive, whereas a very simple and effective possibility is provided by the invention for supplying the vehicle 1 with electrical energy during the entire traveling time.

[0026] The present invention has been explained in combination with a gondola car of an aerial cableway, but the invention is not restricted to aerial cableways, but can also be used, for example, in funicular railroads, with the friction wheels then being frictionally connected, for example, to the rails of the funicular railroads. However, the invention can also be used in other devices for conveying people, such as entertainment devices, which do not have a dedicated drive and are either permanently pushed or pulled or such as, for example, roller coasters are conveyed only temporarily by a drive to a high level and then travel along a path driven by the force of gravity and in the meantime can be supplied with electrical energy in a simple manner by means of the invention.

- 1. A conveying device, comprising:
  - a driveless running gear configured to be pushed or pulled along a travel way;
  - an electrical energy storage device connected to and traveling with said running gear along said travel way;
  - at least one consumer for electrical energy connected to said electrical energy storage device; and
  - an apparatus for obtaining electrical energy from a relative movement between said running gear and said travel way and for storing the electrical energy obtained thereby in said electrical energy storage device.
- 2. The device according to claim 1, wherein said travel way is a track cable.
- 3. The device according to claim 1, wherein said travel way is formed with rails.
- 4. The device according to claim 1, wherein said running gear includes rollers running on said travel way.
- 5. The device according to claim 4, wherein said apparatus for obtaining the electrical energy includes a generator connected to at least one of said rollers.
- 6. The device according to claim 5, wherein said generator is a wheel hub generator disposed in at least one of said rollers.
- 7. The device according to claim 6, wherein said wheel hub generator is fitted onto a shaft of said at least one roller.
- 8. The device according to claim 1, which comprises at least one friction wheel mounted to said running gear and frictionally connected to said travel way, and wherein said apparatus for obtaining the electrical energy includes a generator connected to said at least one friction wheel.
- 9. The device according to claim 8, wherein said generator is a wheel hub generator disposed in said friction wheel.
- 10. The device according to claim 11, wherein said wheel hub generator is fitted onto a shaft of said friction wheel.
- 11. The device according to claim 1, wherein said energy storage device includes at least one of rechargeable batteries and capacitors.
- 12. The device according to claim 1, which comprises a gondola car of an aerial cableway mounted to a carried by said running gear.
- 13. The device according to claim 1, which comprises a car of a funicular railroad mounted to said running gear.
- 14. The device according to claim 1, which comprises a vehicle of an amusement ride.
- 15. The device according to claim 1, wherein said consumer is a heating device.
- 16. The device according to claim 1, wherein said consumer is a heating device selected from the group consisting of a seat heater, a floor heater, and a car air heater.
- 17. The device according to claim 1, wherein said consumer is a device selected from the group consisting of an air conditioning unit and a multimedia device.
- 18. The device according to claim 1, wherein said consumer is a device selected from the group consisting of a lighting system, a drive for a car door, and a measuring device.
- 19. The device according to claim 1, wherein said consumer is a device selected from the group consisting of a motor for rotating a gondola car, a device for active pendulum damping, and a drive for an active moving gear for cornering.