Claims

1. An energy supply system (1), in particular for a tool which can be attached or is attached to a hoist (2), having a line storage (3) for winding and unwinding at least one energy line (4) around a winding center (5) of the line storage device (3), wherein at least one carrier (6) is provided for the at least one energy line (4), and the line storage (3) has an opening (7) for the inlet and outlet of the carrier (6) and the energy line (4), characterized in that

   the at least one carrier (6) can be guided through the opening (7) for guiding the carrier (6) and the energy line (4) in sections in the line storage (3) by guide means (8) via a first guide section (9) through a first guide arch (10), and via a second guide section (11), which is adjoining the first guide arch (10), through a second guide arch (12), and via a third guide section (13), which is adjoining the second guide arch (12), and lies further inwards, compared with the first guide section (9), relative to the winding center (5) - and possibly further guide arches and guide sections - to the winding center (5) of the line storage (3), wherein the carrier (6) has an outer, first end (30) and an inner, second end (31), and the carrier (6) has a section (32) with guide means (8) and a section (33) without guide means, wherein the section (33) without guide means extends from the second end (31) to the section (32) with guide means, and the carrier (6) is connected to the winding center (5) at the second end (31) of the carrier (6), and the section (33) without guide means is unguided in the line storage (3), wherein the unguided section (33) of the carrier (6) can be wound essentially spirally around the winding center (5), and the winding radius of the unguided section (33) of the carrier (6) increases or decreases as the guided part of the section (33) of the carrier (6) is wound or unwound, wherein the energy line (4) enters into the line storage (3) in the winding center (5) through a non-rotary joint.

2. The energy supply system according to claim 1, wherein the carrier is designed in the form of at least one sheath (21) of the energy line (4), or in the form of at least one chain (22) with chain links (23) connected to each other in a jointed manner.

3. The energy supply system according to one of the preceding claims, wherein
   - the guide means (8) of the carrier (6) are designed as axial protrusions (24) protruding

from at least part of the carrier (6), preferably with rollers (25) arranged thereon, and the line storage (3) has at least one planar carrier plate (26), and the guide arches and guide sections are designed in the form of a guide track (27), preferably in the form of a groove, in the carrier plate (26), or

- the guide means (8) of the carrier (6) are designed as guide track (28) in the form of guide tracks, preferably in the form of grooves, in at least part of the carrier 6, and the guide arches and guide sections are designed in the form of an arrangement of protrusions (29) protruding from the carrier plate, preferably with rollers arranged thereon.

4. The energy supply system according to one of the preceding claims, wherein a rotary joint (34) is provided for the energy line (4) in the winding center (5).

5. The energy supply system according to one of the preceding claims, wherein the unguided section (33) of the carrier (6) can be wound and unwound in reverse layers about the winding center (5) as the guided part of the section (31) of the carrier (6) is wound and unwound.

6. The energy supply system according to one of the preceding claims, wherein the distance of the guide arches (10, 12, 14, 16, 18) from each other is essentially invariable.

7. The energy supply system according to one of the preceding claims, wherein
   - the guide arches (10, 12, 14, 16, 18) essentially have a winding angle of 180 degrees, and/or
   - the guide arches (10, 12, 14, 16, 18) have the same and/or different radii of curvature, wherein the guide arches (10, 12, 14, 16, 18) with different radii of curvature have a decreasing radius of curvature from the opening (7) of the line storage (3) towards the winding center (5), and/or
   - the respective radius of curvature of a guide arch (10, 12, 14, 16, 18) is constant.

8. The energy supply system according to one of the preceding claims, wherein the respective guide sections (9, 11, 13, 15, 17, 19) have an essentially straight course and/or essentially the same longitudinal extent.

9. The energy supply system according to one of the preceding claims, wherein the line storage (3) has essentially an elongated shape with a greater longitudinal extent than transverse extent, and the guide sections (9, 11, 13, 15, 17, 19) run essentially along the longitudinal extent of the line storage (3).

10. The energy supply system according to one of the preceding claims, wherein winding and unwinding of the at least one carrier (6) is essentially in one plane.

11. The energy supply system according to one of the preceding claims, wherein the inlet and outlet of the at least one carrier (6) takes place through the opening (7) at a fixed position of the line storage (3).

12. The energy supply system according to one of the preceding claims, wherein the at least one carrier (6) has an essentially constant transverse extent.

13. The energy supply system according to one of the preceding claims, wherein the guide arches (10, 12, 14, 16, 18) and guide sections (9, 11, 13, 15, 17, 19) have an essentially spiral course from the opening (7) towards the winding center (5), and the at least one carrier (6) can be wound and unwound in sections essentially spirally in the line storage (3) towards the winding center (5).

14. The energy supply system according to one of the preceding claims, wherein the position of the winding center (5) in the line storage (3) is designed to be adjustable, wherein preferably the winding center (5) in the line storage (3) is arranged to be linearly movable, in particular preferably, linearly movable in the direction of and/or transverse to the guide sections (9, 11, 13, 15, 17, 19).

15. A hoist (35), in particular a crane, comprising an energy supply system (1) according to one of the preceding claims.

16. The hoist (35) according to the preceding claim, wherein the energy supply system (1) is attached to an outrigger (36) of the hoist (35).