Claims

1. A winch assembly comprising:
a winch pedestal;
a winch drum mounted on a winch drum drive shaft and configured to be driven to rotate on the winch pedestal about a winch axis; and
a spooling carriage supported by at least one support arm; and
a locking mechanism configured to secure the at least one support arm to the winch pedestal at a desired angle relative to the horizontal and/or vertical plane;
wherein the at least one support arm is pivotally connected to the winch pedestal via a hub, wherein the hub surrounds the winch axis,
wherein pivotal movement of the at least one support arm rotates the spooling carriage relative to the winch pedestal and wherein the spooling carriage comprises a spooling guide assembly configured to move in a reciprocating motion.

2. The winch assembly as claimed in claim 1 comprising a winch drive motor.

3. The winch assembly as claimed in claim 1 or claim 2 wherein the hub on the winch pedestal is a component of the winch pedestal housing or a component of a winch pedestal motor housing.

4. The winch assembly as claimed in any preceding claim wherein the hub comprises a spigot.

5. The winch assembly as claimed in claim 4 wherein the spigot comprises a load bearing surface.

6. The winch assembly as claimed in claim 4 or 5 wherein the spigot is a load bearing pivot which is co-axial with the winch axis.

7. The winch assembly as claimed in any of claims 4 to 6 wherein the spigot has a cylindrical shape.

8. The winch assembly as claimed in any preceding claim wherein the support arm comprises a support plate.

9. The winch assembly as claimed in claim 8 wherein the support plate comprises an outer edge or skirt which is upstanding from the support plate.

10. The winch assembly as claimed in any of claims 4 to 9 wherein the at least one support arm has a spigot ring located at one end, and the spigot ring is pivotally connected to the spigot and is configured to pivot the at least one support arm about the spigot.

11. The winch assembly as claimed in any of claims 4 to 10 wherein the at least one support arm is configured to rotate about the spigot to move the spooling guide assembly on the spooling carriage to a predetermined desired angle relative to the horizontal and/or vertical plane.

12. The winch assembly as claimed in claim 10 or claim 11 wherein the arrangement of the spigot ring on the at least one support arm with the spigot on the winch pedestal is configured to transfer the load of the at least one support arm and any load that the at least one support arm bears from the at least one support arm to the winch pedestal structure.

13. The winch assembly as claimed in any preceding claim wherein the spooling carriage is supported by two support arms, wherein the support arms are pivotally connected to the winch pedestal via the hub.

14. The winch assembly as claimed in claim 13 wherein each support arm is pivoted either side of the winch pedestal such that the support arms are substantially parallel and laterally-spaced apart.

15. The winch assembly as claimed in any preceding claim wherein the at least one support arm is configured to pivot through an angle of at least sixty degrees.

16. The winch assembly as claimed in any of claims 1 to 15 wherein the at least one support arm is configured to pivot through an angle of approximately ninety degrees.

17. A spooling carriage for a winch assembly comprising;
a spooling guide assembly;
at least one support arm to support the spooling carriage;
wherein the at least one support arm is configured to be is pivotally connected to a winch pedestal via a hub surrounding a winch axis of the winch assembly;
wherein the at least one support arm is configured to be secured to the winch pedestal at a desired angle relative to the horizontal and/or vertical plane;
and wherein the spooling guide assembly is configured to move in a reciprocating motion.

18. A spooling carriage as claimed in claim 17 wherein the at least one support arm is configured to rotate the spooling carriage to any desired angle relative to the horizontal and/or vertical plane.

19. A spooling carriage as claimed in claim 17 or claim 18 comprising a spooling shaft, wherein the spooling guide assembly is moved along the spooling shaft.

20. A spooling carriage as claimed in any of claims 17 to 19 wherein the spooling guide assembly is driven independently from the winch drive motor by a spooling shaft motor.

21. A spooling carriage as claimed in any of claims 17 to 20 comprising a control unit configured to monitor or control the spooling shaft motor speed, the direction of travel of the spooling guide assembly along the spooling shaft and/or a winch drum rotational speed.

22. A method of configuring a winch assembly comprising the steps of:
providing a winch assembly comprising a winch pedestal;
a winch drum mounted on a winch drum drive shaft on a winch axis;
and a spooling carriage supported by at least one support arm wherein the spooling carriage comprises a spooling guide assembly configured to move in a reciprocating motion;
rotating the spooling carriage relative to the winch pedestal to a desired position by pivoting the at least one support arm about a hub which surrounds the winch axis;
and

securing the spooling carriage relative to the winch pedestal at the desired angle by securing the at least one support arm to the winch pedestal.

23. The method as claimed in claim 21 or claim 22, comprising the steps of:
releasing the spooling carriage from the winch pedestal, rotating the spooling carriage relative to the winch axis to a second desired angle and securing the spooling carriage relative to the winch pedestal at the second desired angle.

24. A method of operating a winch assembly comprising the steps of:
providing a winch assembly comprising:
a winch pedestal;
a winch drum mounted on a winch drum drive shaft and configured to be driven to rotate on the winch pedestal about a winch axis; and
a spooling carriage supported by at least one support arm wherein the spooling carriage comprises a spooling guide assembly configured to move in a reciprocating motion;
wherein the at least one support arm is pivotally connected to the winch pedestal via a hub, wherein the hub surrounds the winch axis, and wherein pivotal movement of the at least one support arm rotates the spooling carriage relative to the winch pedestal;
securing the spooling carriage relative to the winch pedestal at a desired angle by securing the at least one support arm to the winch pedestal;
pulling in or paying out a winch line; and
transferring a sideways force acting on the line to the winch pedestal via the at least one support arm.

25. The method as claimed in claim 24 comprising driving a spooling guide assembly in the spooling carriage independently from the winch drum drive shaft.

26. The method as claimed in claim 24 or 25 comprising monitoring a winch drum rotational speed, a spooling shaft motor or the position of a spooling guide assembly on a spooling shaft.