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(54) **Unboundedly pivoting guiding device with hydraulically powered sheave**

Unbegrenzte gelenkte Lenkvorrichtung mit hydraulisch betriebener Antriebsscheibe

Dispositif de guidage de pivotement illimité avec le disque d'entraînement actionner par le moteur hydraulique

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Description

[0001] The subject of the invention is an unboundedly pivoting guiding device with a sheave driven by a hydraulic motor, wherein said guiding device is unboundedly pivotable by 360° to the left or right around approximately the horizontal bisector. The invention belongs to class B66D 1/02 of international patent classification.

[0002] The technical problem solved by the solution of the unboundedly pivoting guiding device is a constructional variant of such device with a sheave driven by a hydraulic motor, in which hydraulic drive attachments will not disable the unbounded pivoting of the guiding device to the left or right.

[0003] Known solutions of guiding devices with a sheave driven by a hydraulic motor allow for a limited movement of the guiding device to the left or right due to attachments of the hydraulic drive, i. e. hydraulic motor. Attachments or connecting clamps originating in the hydraulic system hinder full rotation of the guiding device by 360°.

[0004] The patent specification DE 2 516 222 C3 discloses a variant of a guiding device, wherein the cable does not substantially deviate from one direction from the drum to the load to be towed. The cable is led via guiding device behind the drum. Based on the direction of the cable from the drum to the guiding device the cable can be oriented towards a load downwards, wherein in this case the cable from the drum to the load is directed by the sheave of the guiding device. If the cable to the load runs upwards, the cable is directed by another sheave of the guiding device. Sheaves are arranged on each side of the cable run. The cable from the guiding device to the load can run on the left and right. The device must adapt thereto and is pivotable around the bisector running approximately in direction of the cable from the drum to the guiding device or the first sheave. To achieve that both sheaves are not dimensioned to a given load, the position of the second sheave is somewhat forward and downwards, so in case of transition of the cable from the guiding device to the load upwards, the second sheave takes over the cable and directs it to the first sheave by a simultaneous rotation of the guiding device around the bisector. The guiding device thus has the main sheave and the guiding sheave. The guiding sheave does not exert pressure on the cable, with which the cable would be retarded while winding or unwinding.

[0005] The guiding device in the patent specification DE 198 30 239 provides for a device in which retarding of the cable while being wound onto the drum is provided by two push sheaves, wherein one is a push sheave functioning as the guide sheave and at the same time pushing the cable so that the cable is constantly pretensioned between the guiding device and the drum in order to provide for a good winding of the cable onto the drum. During unwinding a micro cylinder comes to use, said micro cylinder raising the push sheaves and relaxing the unwinding of the cable to reach the load.

[0006] The patent specification WO2009/148414 discloses construction where the stationary part of the hydraulic motor is an integral part of the casing. Stator of the hydraulic motor protrudes axially into the casing and is furnished with outside the casing situated hydraulic connections, and is moreover surrounded with a rotor of said hydraulic motor. Rotor of the hydraulic motor is embedded within said casing by means of two bearings, which are situated axially apart from each other, whilst the driving member is situated on said rotatable part between said bearings. The complete casing including the driving member and parts of the hydraulic motor and is adapted to be pivotally around the vertical axis attached onto a casing.

[0007] A driving gear for rope unwinding on forestry windlass from the drum according to the WO2009/072992 have a rope installed between the rotating sheave and at least one rotating push reel in a way that the rotating moment of the push drive rotates simultaneously through the other drive, the sheave and the push reel. According to the second implementation case the driving gear for rope unwinding on forestry windlass from the drum, with a rope installed between the rotating sheave and at least one rotating push reel in a way, that the rotating moment of the drive engine rotates the push reels through the drive, when the sheave is rotating freely.

[0008] Variants are known in practice, in which retarding in such guiding device is effected by push sheaves and in unwinding of the cable with a drum this is effected by the drive of the main sheave. The drive is most often a hydraulic motor arranged in the hydraulic system and hoist control. The input-output tube to the hydraulic motor limits rotation of the guiding device around the bisector to a few tens of degrees. All advantages of the basic solution are limited (rotation or transition to two sheaves dimensioned for a transport of a given load).

[0009] The unboundedly pivoting guiding device with a sheave driven by a hydraulic motor of the invention is pivotably fastened in a bracket. Two hydraulic tubes for the supply of hydraulic motors on the guiding device are led to the fixed part of the bracket from the hydraulic system. The tubes of hydraulic motors of the guiding device are connected to the pivoting part of the bracket, which pivots as the guiding device, which is for an unlimited angle of the multiple of 360° to the left or right.

[0010] The invention will now be explained in more detail by way of an embodiment and drawings, in which:

Figure 1 shows a guiding device with a bracket and a sheave driven by a hydraulic motor in front view;

Figure 2 shows a guiding device with a bracket with a sheave driven by a hydraulic motor in partial cross-section in plan view.

[0011] Figure 1 shows a guiding device 1 with a housing 9 and a bracket 5. A hydraulic motor 2 is arranged on the housing 9. An input hydraulic tube 3 and an output

hydraulic tube 4 are connected to said hydraulic motor 2 and at the other end connected to attachments 17, 18 on a pivoting part 7 of the bracket 5. Attachments 12, 13 are arranged on a fixed part 6 of the bracket 5. A cable 11a running from the drum via guiding device 1 continues as a cable 11b to a load.

[0012] Figure 2 shows the guiding device 1 in a partial cross-section of the bracket 5 in plan view. The pivoting part 7 of the bracket 5 is arranged on a shaft 8 of the housing 9 in a way to be fastened in the fixed part 6 of the bracket 5. The pivoting part 7 of the bracket 5 pivots unboundedly to the left or right by a multiple of the angle 360°.

[0013] On the fixed part 6 of the bracket 5 there are arranged gaskets 14 sealing the space between the fixed part 6 of the bracket 5 and the space between grooves 15, 16 on the pivoting part 7 of the bracket 5. The attachments 12, 13 supply pressure medium through a wall of the fixed part 6 of the bracket 5 to the grooves 15, 16. The pivoting part 7 of the bracket 5 is provided with drilled holes, through which the pressure medium flows from the grooves 15, 16 to the attachments 17, 18.

Claims

1. An unboundedly pivoting guiding device with a sheave driven by a hydraulic motor (2), where a housing (9) of the guiding device (1) is pivotable for an unlimited angle of the multiple 360° to the left or right and fastened to a bracket (5), a hydraulic motor (2) is arranged on the housing (9) of the guiding device (1), to which hydraulic motor (2) an input hydraulic tube (3) and an output hydraulic tube (4) are connected
characterized in that
 an input hydraulic tube (3) and an output hydraulic tube (4) are at its other ends connected to attachments (17, 18) on a pivoting part (7) of the bracket (5), wherein attachments (12, 13) are provided on the fixed part (6) of the bracket (5) and the pivoting part (7) of the bracket (5) is fastened on a shaft (8) of the housing (9) in the fixed part (6) of the bracket (5) where gaskets (14) intended to seal the space between the fixed part (6) of the bracket (5) and the space between grooves (15, 16) on the pivoting part (7) of the bracket (5) are arranged.

Patentansprüche

1. Unbeschränkt schwenkbare Lenkvorrichtung mit einer durch einen hydraulischen Motor (2) betriebenen Seilrolle, wobei das Gehäuse (9) der Lenkvorrichtung (1) um einen unbeschränkten Winkel eines Vielfachen von 360° nach links oder nach rechts drehbar und an einer Konsole (5) befestigt ist, wobei der hydraulische Motor (2) am Gehäuse (9) der Lenkvor-

richtung (1) angeordnet ist, wobei mit dem hydraulischen Motor (2) ein hydraulisches Einlassrohr (3) und ein hydraulisches Auslassrohr (4) verbunden sind, **dadurch gekennzeichnet, dass** das hydraulische Einlassrohr (3) und das hydraulische Auslassrohr (4) an ihren anderen Enden mit Anschlüssen (17, 18) am drehbaren Teil (7) der Konsole (5) verbunden sind, wobei die Anschlüsse (12, 13) am festen Teil (6) der Konsole (5) angeordnet sind und wobei der drehbare Teil (7) der Konsole (5) an einer Achse (8) des Gehäuses (9) am festen Teil (6) der Konsole (5) angeordnet ist, an dem Dichtungen (14) zum Abdichten des Raums zwischen dem festen Teil (6) der Konsole (5) und des Raums zwischen den Nuten (15, 16) am drehbaren Teil (7) der Konsole (5) angeordnet sind.

Revendications

1. Dispositif de guidage à pivotement illimité avec une poulie d'entraînement actionnée par un moteur hydraulique (2), dans lequel le boîtier (9) du dispositif de guidage peut pivoter selon un angle illimité du multiple de 360° à gauche ou à droite et est fixé à une console (5), le moteur hydraulique (2) étant agencé sur le boîtier (9) du dispositif de guidage (1), un tuyau hydraulique d'alimentation (3) et un tuyau hydraulique de sortie (4) étant attachés au moteur hydraulique (2), **caractérisé en ce que** le tuyau hydraulique d'alimentation (3) et le tuyau hydraulique de sortie (4) sont attachés à leurs autres extrémités aux raccordements (17, 18) sur la partie pivotante (7) de la console (5), les raccordements (12, 13) étant agencés sur la partie fixe (6) de la console (5) et la partie pivotante (7) de la console (5) étant fixée sur l'arbre (8) du boîtier (9) dans la partie fixe (6) de la console (5), où sont agencés des joints d'étanchéité (14) destinés à colmater l'espace entre la partie fixe (6) de la console (5) et l'espace entre les rainures (15, 16) sur la partie pivotante (7) de la console (5).

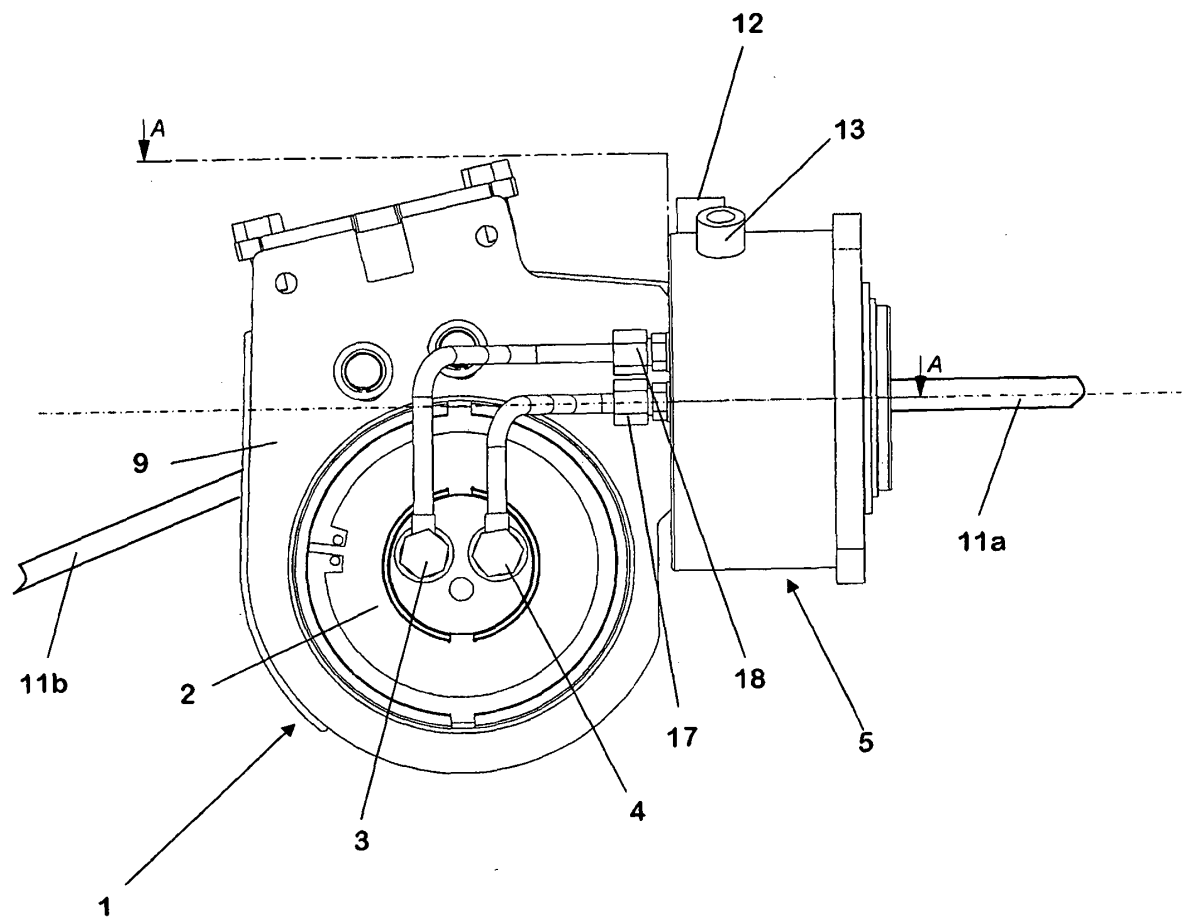


Figure 1

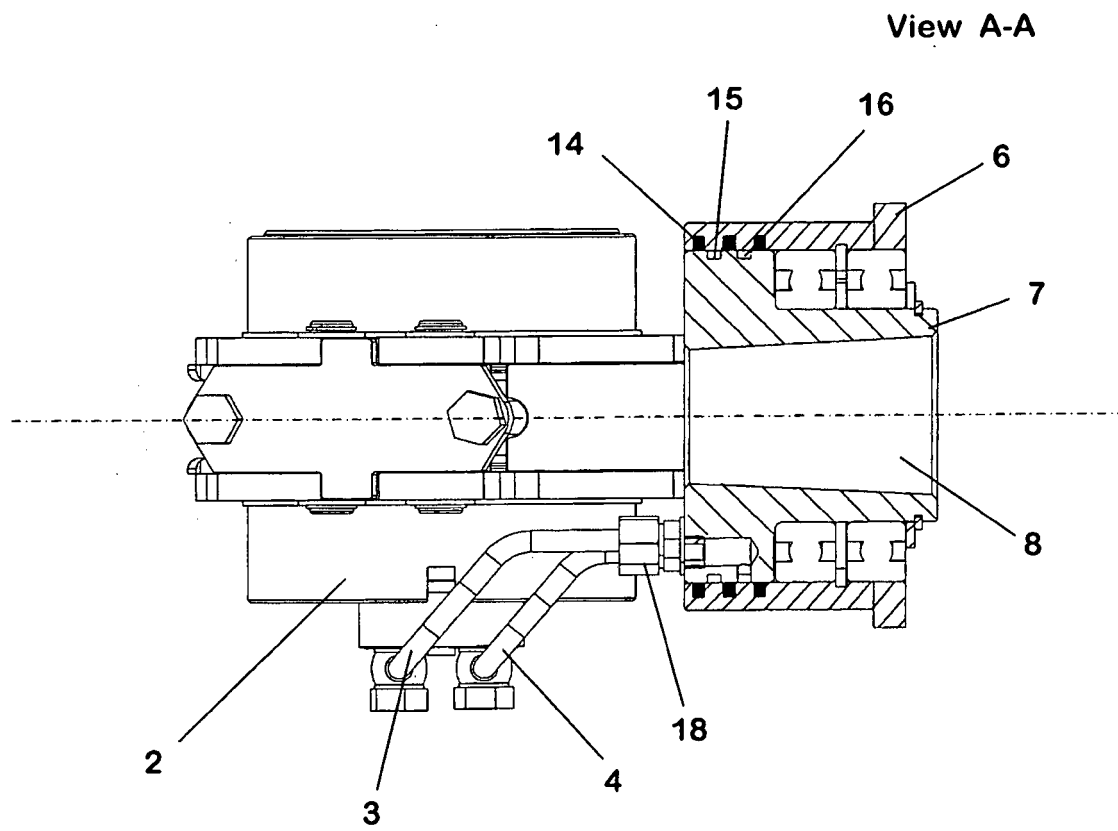


Figure 2

REFERENCES CITED IN THE DESCRIPTION

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