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(54) APPARATUS FOR MOUNTING AND DISMOUNTING A SWING WINCH HOIST ON A POLE SUPPORT

(57) An apparatus (10) for mounting and dismounting a swing winch hoist on a pole support (P), said apparatus (10) comprising:
- a rigid metal supporting overhanging arm (11), fixed to said pole support (P) in a position above the position of said winch hoist with respect to the pole support (P) itself, in which said metal supporting overhanging arm (11) comprises detachable fastening means (14) with respect to said pole support (P), which include:
- a first end zone (11.1) of said arm (11) shaped as a fork (14.1), which partially engages, on one side, a first zone of said pole support (P) by means of the notch (14.2) of the fork itself,
- a detachable fastening member (15), fixed between the free ends of said fork (14.1), and which engages a second zone of said support pole (P), on the opposite side with respect to the notch (14.2) of the fork itself,
- a metal sleeve (16) externally slidingly coupled and fixed in a detachable manner with respect to said pole support (P), which sleeve (16) is juxtaposed to, and supports from the underneath said supporting arm (11).

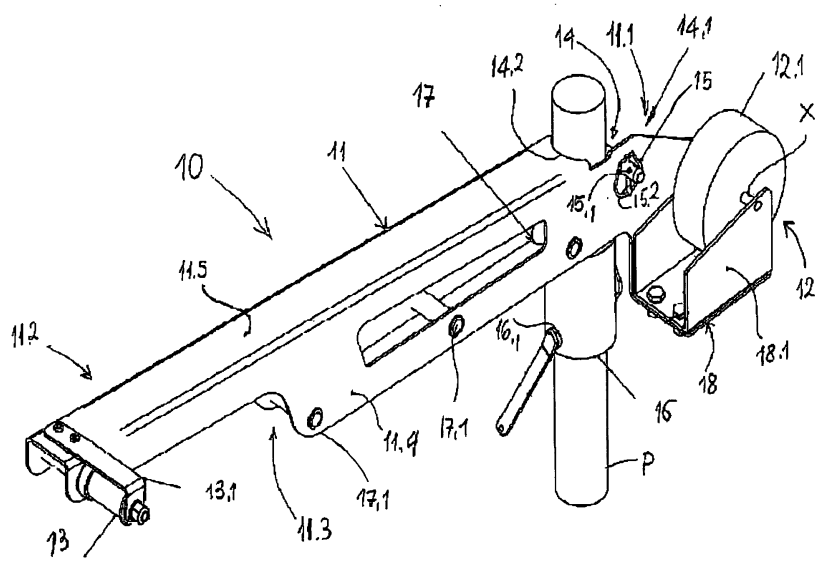

Fig. 2

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Description

[0001] In the building trade, it is common practice to use swing winch hoists for lifting loads.

[0002] In particular, a winch hoist of the type specified is fixed to a metallic pole support, such as a vertical tubular element of pipe scaffolding (on a building site), or a vertical tubular element interposed and fixed between two decks of a building structure.

[0003] A winch hoist of the type specified, according to known art, is shown in figure 1 accompanying this description.

[0004] A winch hoist of the type specified can weigh on average between 50 kg and 60 kg and is fixed to the respective metallic pole support at a height of around 2m from the supporting plane on which the workers who need to use the hoist are standing. Therefore, to mount the hoist, an operator needs to manually lift and support said hoist at the indicated height, until such time as the operations required to fix it to said pole support are completed, operations that are carried out by another operator. Alternatively, a system of support struts needs to be provided for mounting said hoist. Therefore, at least two operators are required to mount said winch hoist, otherwise support means need to be provided beforehand.

[0005] This involves not only a significant input in terms of labor, but also the risk of accidents to the operator responsible for manually lifting said hoist.

[0006] Document no. GB2 087 346 A describes an apparatus for mounting and dismounting a swing winch hoist on a pole support, comprising:

- a rigid metal supporting overhanging arm, fixed to said pole support in a position above the position of said winch hoist with respect to the pole support itself;
- a motorized winch, comprising a drum mounted with substantially horizontal axis, rotating about an axis thereof, fixed with respect to a first end zone of said arm proximal to said pole support, for determining the rotation of the drum itself;
- a guide roller with a substantially horizontal axis, rotating about the axis thereof, fixed with respect to a second end zone of said arm distal from said pole support, said drum and said guide roller being aligned with each other according to a same substantially vertical plane;
- a lifting rope, fixed by means of an end thereof, wound about said drum and diverted by means of said guide roller, which comprises, at the other end thereof, gripping and suspension means to which the resistance of a load may be applied.

[0007] The afore-mentioned known apparatus comprises winch means driven by a motor, which makes the structure complex and difficult to maintain, as well as costly.

[0008] Starting from the notion of the afore-mentioned problem, the present invention intends to provide a solution wherein a manual winch hoist can be used.

[0009] In particular, an aim of the present invention is to provide an apparatus for mounting a swing wihch hoist on a pole support, which will make it possible to considerably reduce physical fatigue and simplify the work, thereby enabling a single operator to carry out all the required operations in safe conditions.

[0010] A further aim of the invention is to provide an apparatus for mounting a swing winch hoist on a pole support, which has a simplified structure, and is safe, reliable and easy to use. Yet another aim of the present invention is to provide an apparatus for mounting a swing winch hoist on a pole support, that enables a single operator to carry out the required mounting operations, simply and safely.

[0011] In view of these aims, the present invention provides an apparatus for mounting and dismounting a swing winch hoist on a pole support, the essential characteristic of which is the subject of claim number 1.

[0012] Further advantageous characteristics are described in the dependent claims.

[0013] More specifically, according to the present invention, said apparatus is characterized in that said metal supporting overhanging arm comprises detachable fastening means with respect to said pole support, which include:

- said first end zone of said arm shaped as a fork, which partially engages, on one side, a first zone of said pole support, by means of the notch of the fork itself,
- a detachable fastening member, fixed between the free ends of said fork, and which engages a second zone of said support pole, on the opposite side with respect to the notch of the fork itself,
- a metal sleeve, externally slidingly coupled and fixed in a detachable manner with respect to said pole support, which sleeve is juxtaposed to, and supports from the underneath said supporting arm.

[0014] The features of the present invention will become more apparent from the following detailed description of an embodiment thereof, with reference to the accompanying drawing, illustrating an apparatus for mounting and dismounting a swing winch hoist on a pole support, in which:

- figure 1 is a photographic illustration of a swing winch hoist on a pole support, according to known art;
- figure 2 shows a perspective view of the apparatus for mounting and dismounting a swing winch hoist on a pole support according to an embodiment of the present invention.

[0015] The apparatus for mounting and dismounting a swing winch hoist on a pole support, according to the invention, is indicated as a whole by the number 10.

[0016] As is known, it comprises:

- a rigid metal supporting overhanging arm 11, fixed to said pole support P in a position above the position of a winch hoist (not shown) with respect to the pole support P itself;
- a manual winch 12, comprising a drum 12.1 mounted with substantially horizontal axis, rotating about an axis thereof, fixed with respect to a first end zone 11.1 of said arm 11 proximal to said pole support P, and a manual crank (not shown) fixed with respect to the axis (X) of said drum 12.1, for determining the rotation of the drum itself;
- a guide roller 13 mounted with substantially horizontal axis, rotating about the axis thereof, fixed with respect to a second end zone 11.2 of said arm 11 distal from said pole support P, said drum 12.1 and said guide roller 13 being aligned with each other according to a same substantially vertical plane;
- a lifting rope (not shown), fixed by means of an end thereof, wound about said drum 12.1 and diverted by means of said guide roller 13, which comprises, at the other end thereof, gripping and suspension means (not shown), to which the resistance of a load (not shown) may be applied.

[0017] In this manner, after unwinding said rope and connecting said gripping and suspension means with respect to a hoist to be fixed to said pole support P, by acting on said crank, said winch 12 is rotated manually, which places under traction and subsequent circulation the rope itself, diverted by means of said guide roller 13, thereby raising and keeping suspended said hoist at the desired height by means of said supporting overhanging arm 11, for the time necessary for the operations to fix the hoist to said pole P, and carrying out operations in the reverse manner, after disconnecting said hoist from said pole, to remove the hoist itself.

[0018] In particular, according to the invention, said metal supporting overhanging arm 11 comprises detachable fastening means 14 with respect to said pole support P, which include:

- said first end zone 11.1 of said arm 11 shaped as a fork 14.1, which partially engages, on one side, a first zone of said pole support by means of the notch 14.2 of the fork itself,
- a detachable fastening member 15, fixed between the free ends of said fork 14.1 and which engages a second zone of said support pole, on the opposite side with respect to the notch 14.2 of the fork itself,
- a metal sleeve 16, externally slidingly coupled and fixed in a detachable manner with respect to said pole support P, which sleeve is juxtaposed to, and supports from the underneath said supporting arm 11.

[0019] It will be noted that, in the example shown, said detachable fastening member 15 consists of a fastening pin 15.1 with a plurality of transversal through-holes, which is arranged passing through a pair of corresponding through-holes, provided in the opposite prongs of said fork 14.1 and aligned along a transversal axis. A split pin 15.2, engaged in the appropriate one of said holes on the pin 15.1, secures the fastening pin 15.1 in a detachable way.

[0020] On the other hand, the pole support P has a plurality of pairs of diametrical through-holes (not visible in figure 2). Said metal sleeve 16, in turn, has a corresponding pair of diametrical through-holes, axially aligned with a corresponding pair of diametrical holes of said pole P. A fastening pin 16.1 is arranged passing through said two pairs of diametrically aligned corresponding holes of said sleeve 16 and of said pole support P, thereby assuring the detachable fastening.

[0021] In particular, said supporting overhanging arm 11 is formed of a substantially upside-down, "U"-shaped metal profile 11.3, comprising two substantially vertical sides 11.4 a substantially horizontal bridge 11.5 between said sides.

[0022] Said first end zone 11.1 of said arm 11 shaped as a fork 14.1 is formed of respective free portions of said sides 11.4 extended beyond said bridge 11.5.

[0023] A transverse spacer member 17 is fixed between said sides 11.4, distal from said bridge 11.5 and shaped to be partially coupled to said pole support P underneath said first end zone 11.1.

[0024] A plurality of further transverse spacers 17.1 are fixed between side sides 11.4, to stiffen the structure of said supporting arm 11.

[0025] Furthermore, supporting overhanging arm 11 comprises a substantially "L"-shaped side bracket 18, provided at an extended free portion of one of said sides 11.4 and on which a substantially "U"-shaped rigid metal bracket 18.1 is fixed, the free branches of which rotationally support the axis of said drum 12.1.

[0026] Advantageously, said lifting rope (not illustrated) is formed of a sturdy ribbon.

[0027] It will be noted that said guide roller 13 is rotationally supported externally to the side 11.4 of said supporting arm 11, on which said substantially "L"-shaped bracket 18 is provided.

[0028] To that end, there is provided a sideways "L"-shape bracket 13.1, fixed by its horizontal branch onto the bridge 11.5 of the arm 11 and with its overhanging vertical branch supporting an end of the axis of said guide roller 13, the other end of which is supported by means of said side 11.4 of the arm 11. As is evident from the above description, said apparatus 10 for mounting a swing winch hoist on a pole support, according to the present invention, makes it possible to considerably reduce physical fatigue and simplify the work, thereby enabling a single operator to carry out all the required operations in safe conditions.

[0029] Furthermore, said apparatus 10 as described has a simplified structure, and is safe, reliable and easy

to use.

[0030] In addition, said apparatus 10 as mentioned enables a single operator to carry out all the operations required for the above-mentioned mounting, in a safe, simple manner.

[0031] As can be seen from the above description, the present invention enables the aims listed in the introduction to be achieved simply and advantageously.

Claims

1. An apparatus (10) for mounting and dismounting a swing winch hoist on a pole support (P), said apparatus (10) comprising:

   - a rigid metal supporting overhanging arm (11), fixed to said pole support (P) in a position above the position of said winch hoist with respect to the pole support (P) itself;
   - a manual winch (12), comprising a drum (12.1) mounted with substantially horizontal axis, rotating about an axis thereof, fixed with respect to a first end zone (11.1) of said arm (11) proximal to said pole support (P), and a manual crank fixed with respect to the axis (X) of said drum (12.1), for determining the rotation of the drum itself;
   - a guide roller (13) mounted with substantially horizontal axis, rotating about the axis thereof, fixed with respect to a second end zone (11.2) of said arm (11) distal from said pole support (P), said drum (12.1) and said guide roller (13) being aligned with each other according to a same substantially vertical plane;
   - a lifting rope, fixed by means of an end thereof, wound about said drum (12.1) and diverted by means of said guide roller (13), which comprises, at the other end thereof, gripping and suspension means to which the resistance of a load may be applied,

   characterized in that said metal supporting overhanging arm (11) comprises detachable fastening means (14) with respect to said pole support (P), which include:

   - said first end zone (11.1) of said arm (11) shaped as a fork (14.1), which partially engages, on one side, a first zone of said pole support (P) by means of the notch (14.2) of the fork itself,
   - a detachable fastening member (15), fixed between the free ends of said fork (14.1), and which engages a second zone of said support pole (P), on the opposite side with respect to the notch (14.2) of the fork itself,
   - a metal sleeve (16) externally slidingly coupled and fixed in a detachable manner with respect to said pole support (P), which sleeve (16) is juxtaposed to, and supports from the underneath said supporting arm (11).

2. An apparatus (10) according to claim 1, **characterized in that**:

   - said metal supporting overhanging arm (11) consists of a substantially upside-down, "U"-shaped metal profile, comprising two substantially vertical sides (11.4) and a substantially horizontal bridge (11.5) between said sides,
   - said first end zone (11.1) of said arm (11) shaped as a fork (14.1) consists of respective free portions of said sides (11.4) extended beyond said bridge (11.5),
   - a transverse spacer member (17) fixed between said sides (11.4), distal from said bridge (11.5) and shaped to be partially coupled to said pole support (P) underneath said first end zone (11.1) of said arm (11).

3. An apparatus (10) according to one or more of the preceding claims, **characterized in that** said supporting overhanging arm (11) comprises a substantially "L"-shaped side bracket (18), provided at an extended free portion of one of said sides (11.4) and on which a substantially "U"-shaped rigid metal bracket (18.1) is fixed, the free branches of which rotationally support the axis (X) of said drum (12.1).

4. An apparatus (10) according to one or more of the preceding claims, **characterized in that** said rope is ribbon-shaped.

5. An apparatus (10) according to one or more of the preceding claims, **characterized in that** said guide roller (13) is rotationally supported externally to the side (11.4) of said supporting arm (11) on which said substantially "L"-shaped bracket (18) is provided.

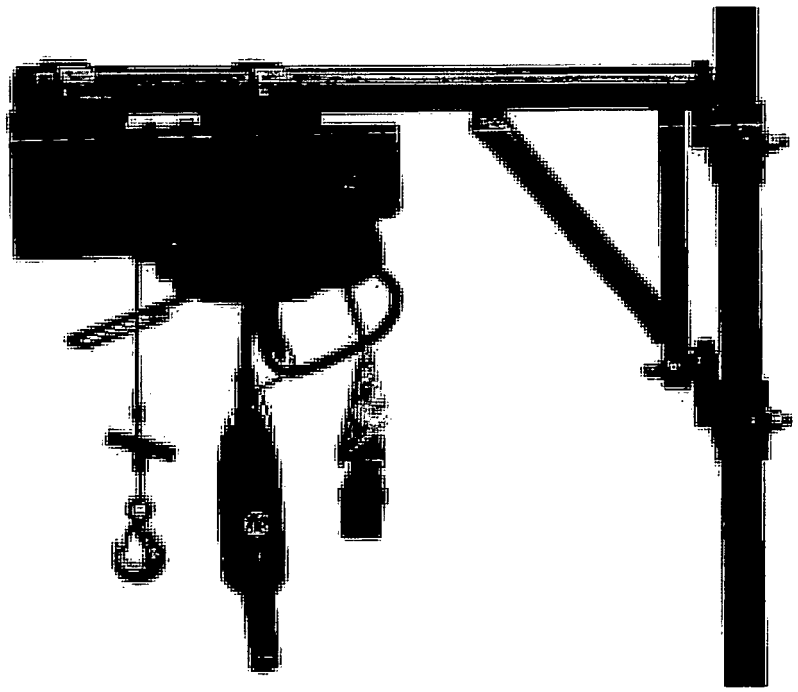

Fig. 1

PRIOR ART

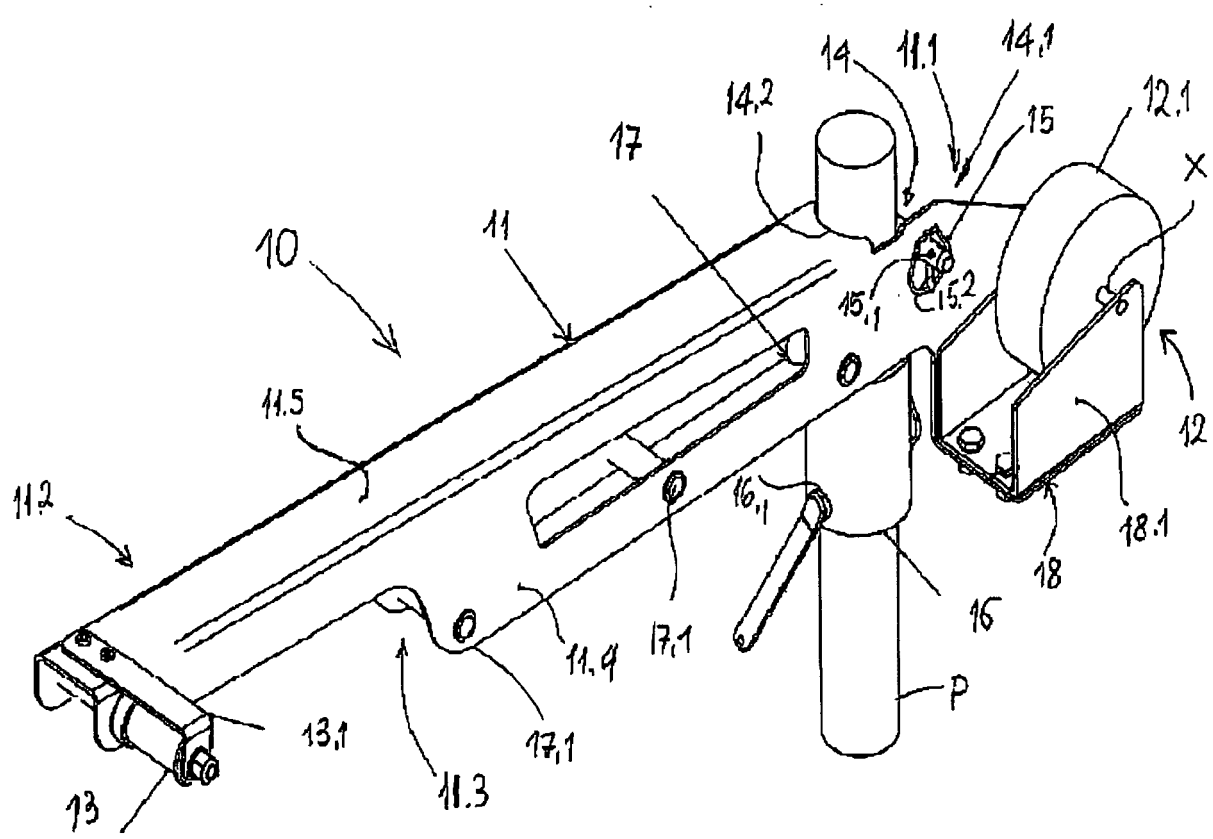
14
11.1
14.1
14.2
12.1
15
17
X
10
11
15.1
15.2
11.5
12
11.2
16.1
18.1
18
16
11.4
17.1
P
13.1
17.1
11.3
13

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 15 00 3616

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			B66C B66D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	24 May 2016	Rupcic, Zoran

CATEGORY OF CITED DOCUMENTS

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24-05-2016

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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