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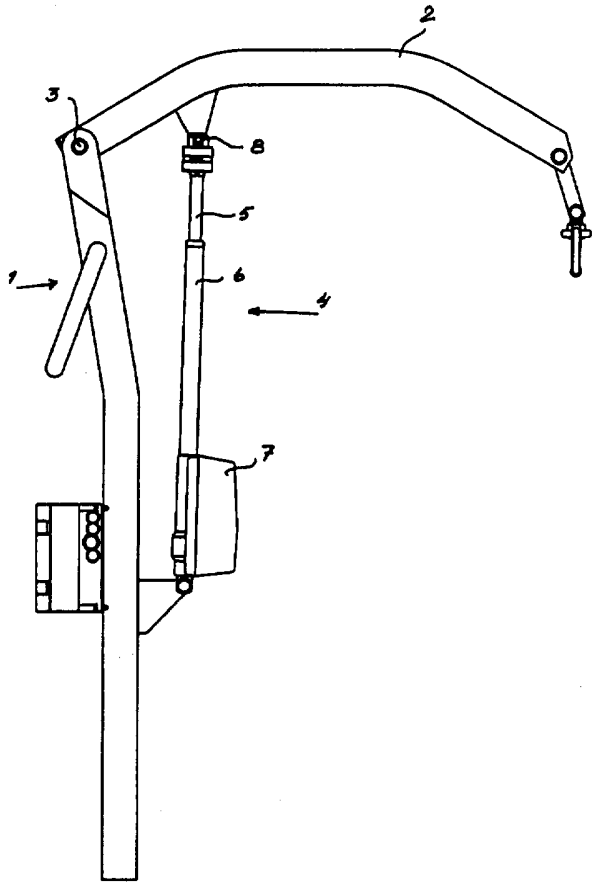
(54) Title: ADJUSTING MEANS

(57) Abstract

Adjusting means for hoisting cranes or the similar, consists of a work spindle, which is given an axial travel within a cylinder by means of a relative movement between a screw and a cooperating groove following driving means. The work spindle has a free end, which is connected to a lifting arm of the hoisting crane through a connector or the like. In order to make it possible to move the work spindle axially without help of the driving means, when emergency, the connector (8) consists of a connection which is stiff in the axial direction of the work spindle, and which consists of two parts (9, 11) which are rotatable in relation to each other against a certain friction resistance around an axis, which is concentric to the work spindle (5).



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ADJUSTING MEANS

The invention relates to an arrangement at an adjusting means for a hoisting crane or the like, which adjusting means consists of a work spindle which is given an axial travel within a cylinder by means of a relative movement between a screw and a cooperating groove meshing driving means, said work spindle having a free end, which is connected to a lifting arm of the hoisting crane by means of a connector.

An adjusting means of above mentioned kind is known, where the work spindle consists of a screw in the threads of which a groove following means meshes, which means moves in a circular path around the screw. If the screw is prevented from rotating, the screw will be displaced in one or the other of two directions depending on the rotating direction of the groove following means. The free end of the screw is normally fixed to a lifting arm whereby the lifting arm follows the travel of the screw in its axial direction. The screw will not rotate because it is fixed to the lifting arm. If however, the driving motor, which drives the groove following means, will be out of order or its supply of energy will be broken, it may be necessary to reset the lifting arm to its starting position without the driving motor working. This can however not be accomplished without the screw being possible to rotate freely. The object of the invention is to provide an arrangement, which permits the work spindle to be rotated by hand but that the normal working operation is the same under normal conditions. The arrangement according to the invention is thus an arrangement to be used in emergency in order to reset the hoisting crane to its starting position.

The characterizing features of the invention are stated in the enclosed claims.

A preferred embodiment of the invention will be described in the following with reference to the enclosed drawings.

Fig. 1 is a side view of a hoisting crane including the adjusting means according to the invention.

Fig. 2 is partly a side view partly a longitudinal section of the arrangement according to the invention.

In fig. 2 it is shown a hoisting crane 1, which includes a lifting arm 2. The lifting arm can tilt up and down about a joint 3 by means of an adjusting means 4. The adjusting means includes a screw or work spindle 5, which can be moved backwards and forwards within a cylinder 6. The screw 5 meshes within the cylinder 6 by a groove following driving means, e.g. a ball, which is axially fixed and is forced to move in a circular path around the screw by means of a driving motor. This is known art and all the means are placed within a housing 7. When the groove following driving means is moved around the screw and the screw is prevented from rotating the screw will travel upwards or downwards depending on the moving direction of the groove following driving means around the screw. Thus, according to the known art the work spindle or the screw is non-rotatable fixed to the lifting arm 2. The only possibility to reset the work spindle to its inserted position in the cylinder 6 if the driving motor should collapse or its supply of electricity should be broken is to demount the work spindle from the lifting arm 2 and to turn the work spindle 5 (the screw) in such a direction that it will be screwed into the groove following driving means. When the hoisting crane according to this invention is used for hoisting or lifting handicapped persons, it is important that there is some form of possibility to reset the hoisting crane if emergency, without the work spindle to be demounted from the lifting arm. Therefore it should be possible to rotate the work spindle by hand when emergency. This is now effected by the means shown in fig. 2 and denoted by 8. This means is a connector between the free end of the work spindle 5 and the lifting arm 2.

The connector 8 includes a piston rod sleeve 9, which is pushed on to the work spindle 5 at its upper free end and is fixed to

the spindle 5 against rotating and in axially direction by means of a pin 10. A mounting sleeve 11 is rotatably applied around the piston rod sleeve 9 and is thus rotatable in relation to the piston rod sleeve 9 but is fixed to the lifting arm 2 by means of a screw 12 and can thus not rotate in relation to the lifting arm 2. The screw 12 is inserted in a not shown eye on the lifting arm 2. The piston rod sleeve 9 has a sliding fase 13 on its upper side and the mounting sleeve 11 has an opposite sliding fase 13, the two sliding fases interacting. A bush 15 is placed between the two sliding fases 13, 14. The bush 15 and the sliding fases 13, 14 carry the thrust loads between the two sleeves. A turning sleeve 16 surrounds the two sleeves 9 and 11 in order prevent these sleeves from being separated. The turning sleeve 11 is connected with the under part of the piston rod sleeve 9 by means of threads 17. The upper part of the turning sleeve 16 has a peripherally flange 18, which contacts a peripherally shoulder 19 on the mounting sleeve 11. This prevents the mounting sleeve 11 to be pulled apart from the piston rod sleeve 9. There is also a possibility to use the thread connection 17 for adapting the sliding friction between the bush and the sliding fases.

The connector according to the invention acts so that the friction between the piston rod sleeve 9 and the mounting sleeve 11 is not greater than that the work spindle can be rotated by hand if the driving motor by any reason should not be able to operate but that said friction is great enough to prevent the rotating of the work spindle 5 when the groove following driving means moves around the work spindle (screw). By rotating the work spindle it will be screwed into the cylinder 6. The lifting arm can hereby by lowered if an emergency situation should occur.

CLAIMS

1. Arrangement at an adjusting means for a hoisting crane or the like, which adjusting means consists of a work spindle, which is given an axial travel within a cylinder by means of a relative movement between a screw and a cooperating groove meshing driving means, said work spindle having a free end, which is connected to a lifting arm of the hoisting crane by means of a connector, said connector (8) consisting of a connection which is stiff in the axial direction of the work spindle and includes two parts in the form of two concentric, in relation to each other, rotatable bodies (9, 11), one being non-rotatably attached to the work spindle (5), the second being non-rotatably attached to the lifting arm (2) of the hoisting crane, c h a r a c t e r i z e d i n that the bodies (9, 11) each has its sliding fase (13, 14), the sliding fases being opposite to each other and perpendicular to the axis of the work spindle, said sliding fases being pressed to contact each other by means of a holding means (16) so that a friction resistance is established against relative turning of said bodies about an axis, which is concentric with the work spindle (5).

2. Arrangement according to claim 1, c h a r a c t e - r i z e d i n that the bodies of the connector consist of two concentric sleeves (10, 11).

3. Arrangement according to claim 1, c h a r a c t e - r i z e d i n that the holding means (16) is a sleeve, which is connected with one of the bodies (9) by means of threads (17) and rotatably grasps the second body (11) through a flange (18).

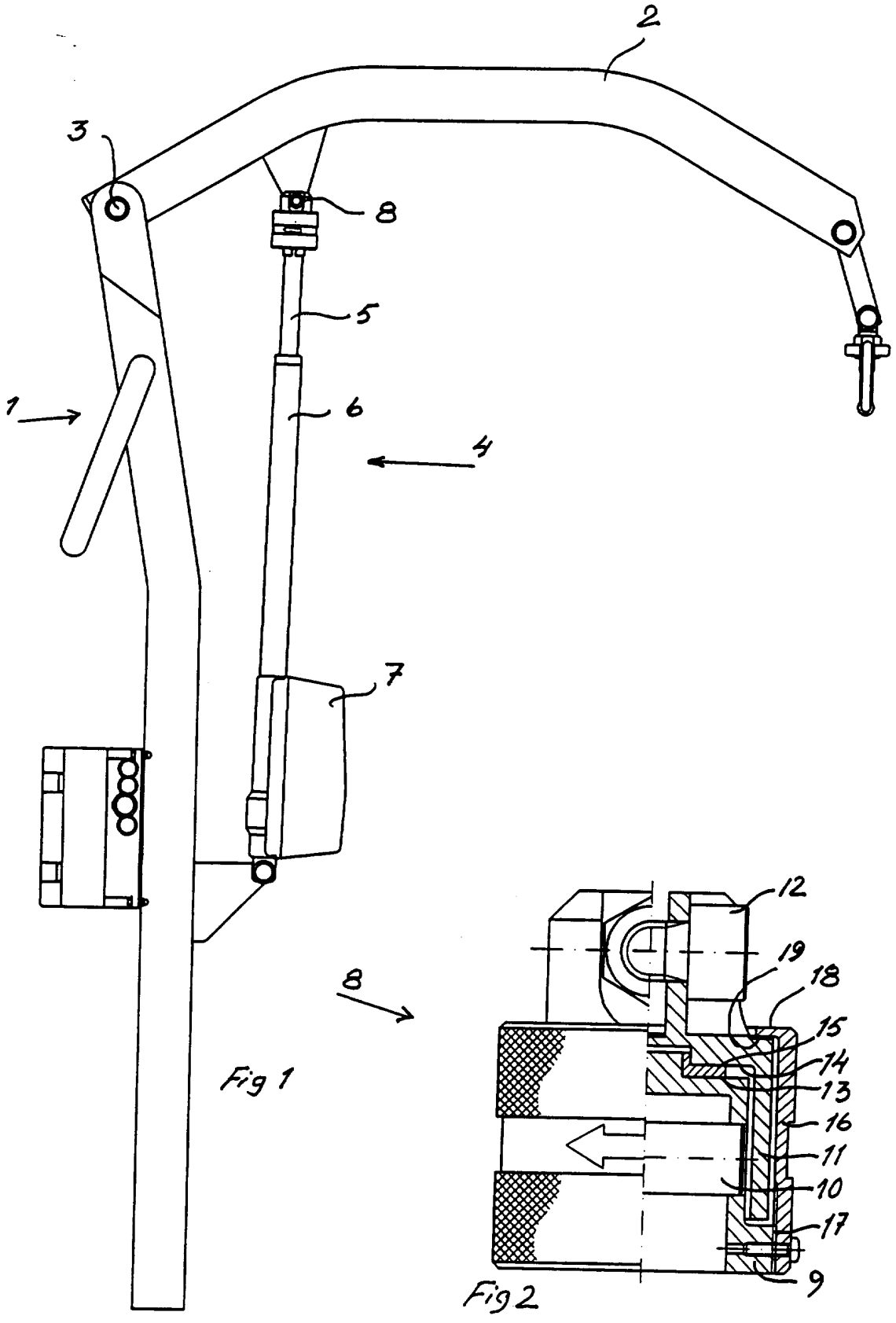

Fig 1

Fig 2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 95/01201

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B66F 3/44 // A61G 7/10
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: B66F, A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DK 130460 B (TRIOTEAM A/S), 24 February 1975 (24.02.75) -- --------	1-3

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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