(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
28 August 2014 (28.08.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/129954 A1

(51) International Patent Classification:
B66C 13/14 (2006.01)

(21) International Application Number:
PCT/SE2014/050147

(22) International Filing Date:
5 February 2014 (05.02.2014)

(25) Filing Language: Swedish

(26) Publication Language: English

(30) Priority Data:
1300134-2 20 February 2013 (20.02.2013) SE

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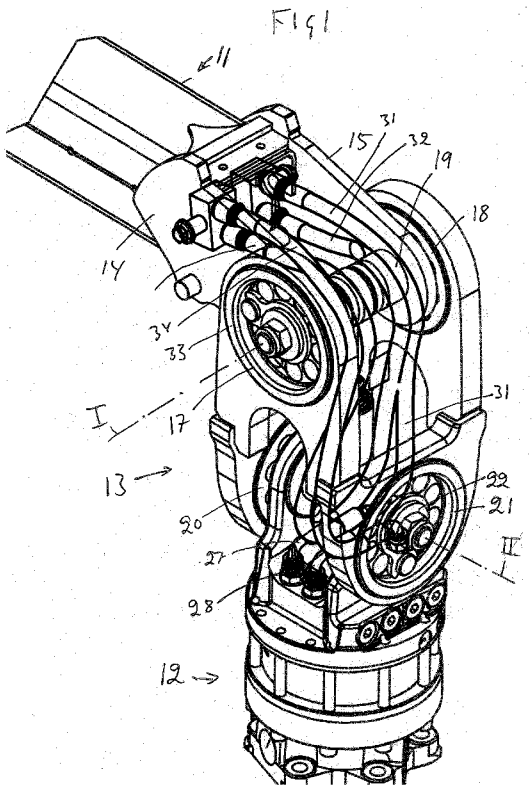
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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: CRANE ARM THAT CARRIES A ROTATOR



(57) Abstract: A crane arm (11) carries a rotator (12) in a Cardan suspension. Some of the hydraulic hoses (31, 32) to the rotator run down on one side of the shaft (22) and run in a bend under it and are coupled to the rotator on the other side of the shaft with angle couplings (27, 28), and some of the hydraulic hoses run down on the other side of the shaft and is coupled in a reversed manner.

WO 2014/129954 A1

Published:

— *with international search report (Art. 21(3))*

Crane Arm That Carries a Rotator

Area of the invention

The invention relates to a crane arm that carries a rotator in a Cardan suspension with an upper hinge and a lower hinge, each of which has two coaxial bearings at a distance from one another, wherein hydraulic hoses to the hose connections of the rotator pass the hinges.

Background of the invention

Conventionally. the hydraulic hoses to the rotator have been drawn outside of the Cardan suspension of the rotator. The hoses are then entirely unprotected.

EP 1448471 shows two open hinges without a through shaft and the hoses run through both hinges down to the top connections on the rotator. This embodiment protects the hoses.

EP1889808 shows the hose connections of the rotator on the side of the rotator. The hoses run through the upper hinge and out between the hinges to the side connections of the rotator, that are unprotected.

Purpose of the invention

The invention has the goal of making available a protected hose run-through even in the case where the lower hinge is not an open hinge.

Short description of the drawings

Figure 1 shows the end of a crane arm that carries a rotator.

Figure 2 is an end view as indicated with arrow 2.

Short description of the invention

When the lower hinge has a shaft between its coaxial bearings the hydraulic hoses are

protected when hydraulic hoses pass down on the one side of the shaft and run in a curve underneath it and hydraulic hoses pass down on the other side of the shaft and run in a curve underneath it and when the hoses are coupled with angle couplings on the top of the rotator. The invention is defined by the claims.

Description of the shown and preferred example of the invention

The figures show the end of a crane arm 11 that carries a rotator 12 via a Cardan suspension 13. Only the rotator's upper part is shown and its lower part is adapted in a conventional manner to carry a working tool. The end of the crane arm has two ears 14, 15 in which the housing 16 of the Cardan suspension is supported by two bearings 17, 18 connected together by a shaft 19. The rotator is supported in two bearings 20, 21 connected together by a shaft 22. The crane arm has four connections 23-26 for hoses 31-34 that are coupled to the four hydraulic connections of the rotator with angle couplings 27-29, two on each side of the shaft 22 but only three are visible in the figures.

The hoses 31, 32 on the right in the figures extend down around the shaft 22 and are coupled to angle couplings 27, 28 on the left of the shaft 22 in the figures. In a corresponding manner, hoses 33, 34 extend down at the left of the shaft 22 and extend in a curve under the shaft 22 and are coupled with angle couplings on the right of the shaft 22. Due to the fact that half of the rotator's connections are placed on the one side of the shaft 22 and the others on the other side, the connections are placed in protection and due to the fact that the they extend in a bend under the shaft the hoses can absorb the movements during the swinging about the shafts 19, 22.

Claim

1. Crane arm that carries a rotator (12) in a Cardan suspension (13) with an upper hinge (I) and a lower hinge (II), each of which has two coaxial bearings (17, 18; 20, 21) at a distance from one another, and hydraulic hoses (31-34) to the hose connections of the rotator pass the hinges,

characterized in that

at least the lower hinge (II) has a shaft (22) between its coaxial bearings (20, 21) and a some of the hydraulic hoses (31, 32) pass down on one side of the shaft (22) and run in a bend under it and are coupled to the rotator on the other side of the shaft with angle couplings (27, 28), and some of the hydraulic hoses (33, 34) pass down on said other side of the shaft (22) and run in a bend under it and are coupled to the rotator with angle couplings (29) on said one side around the shaft.

Fig 1

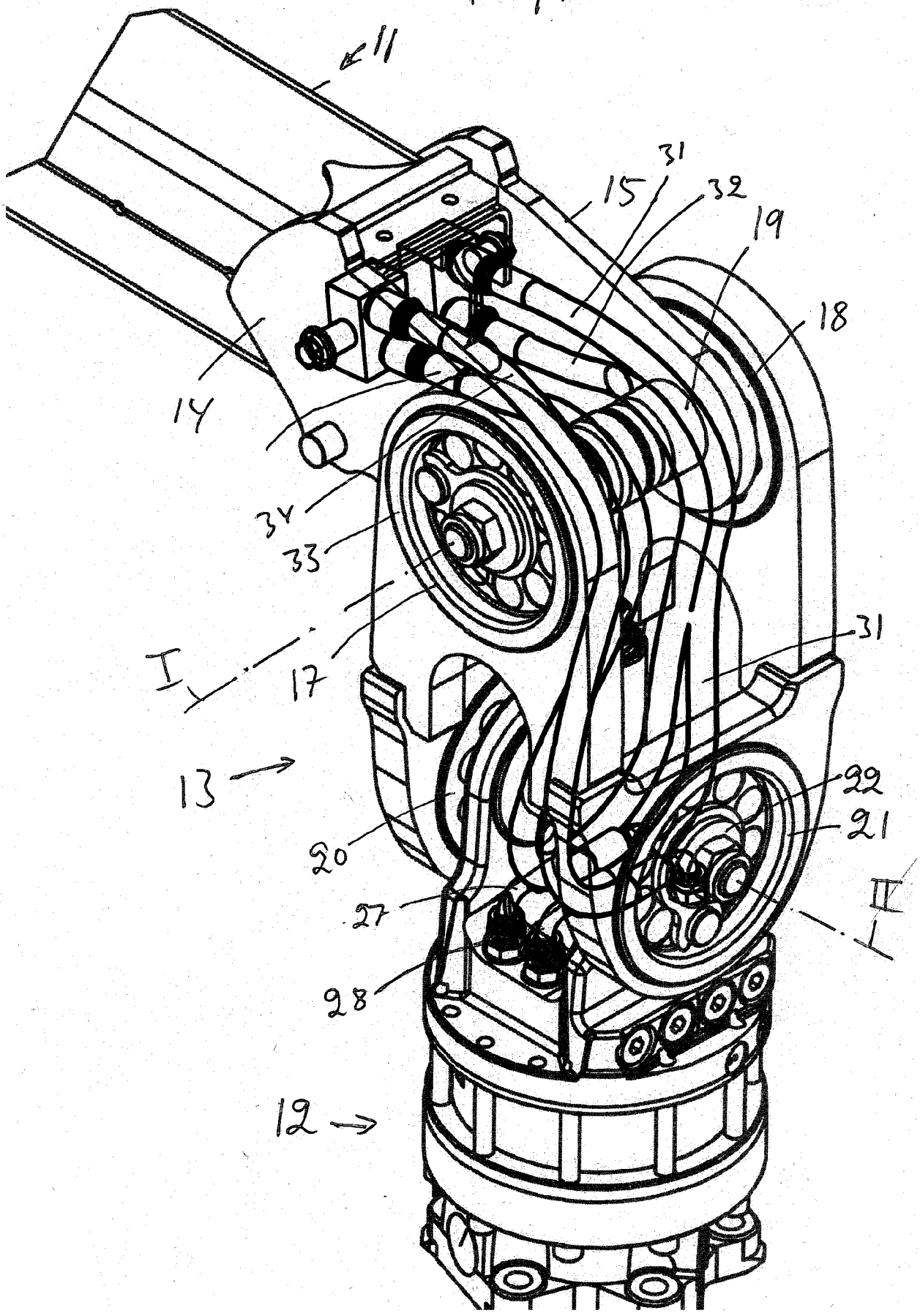
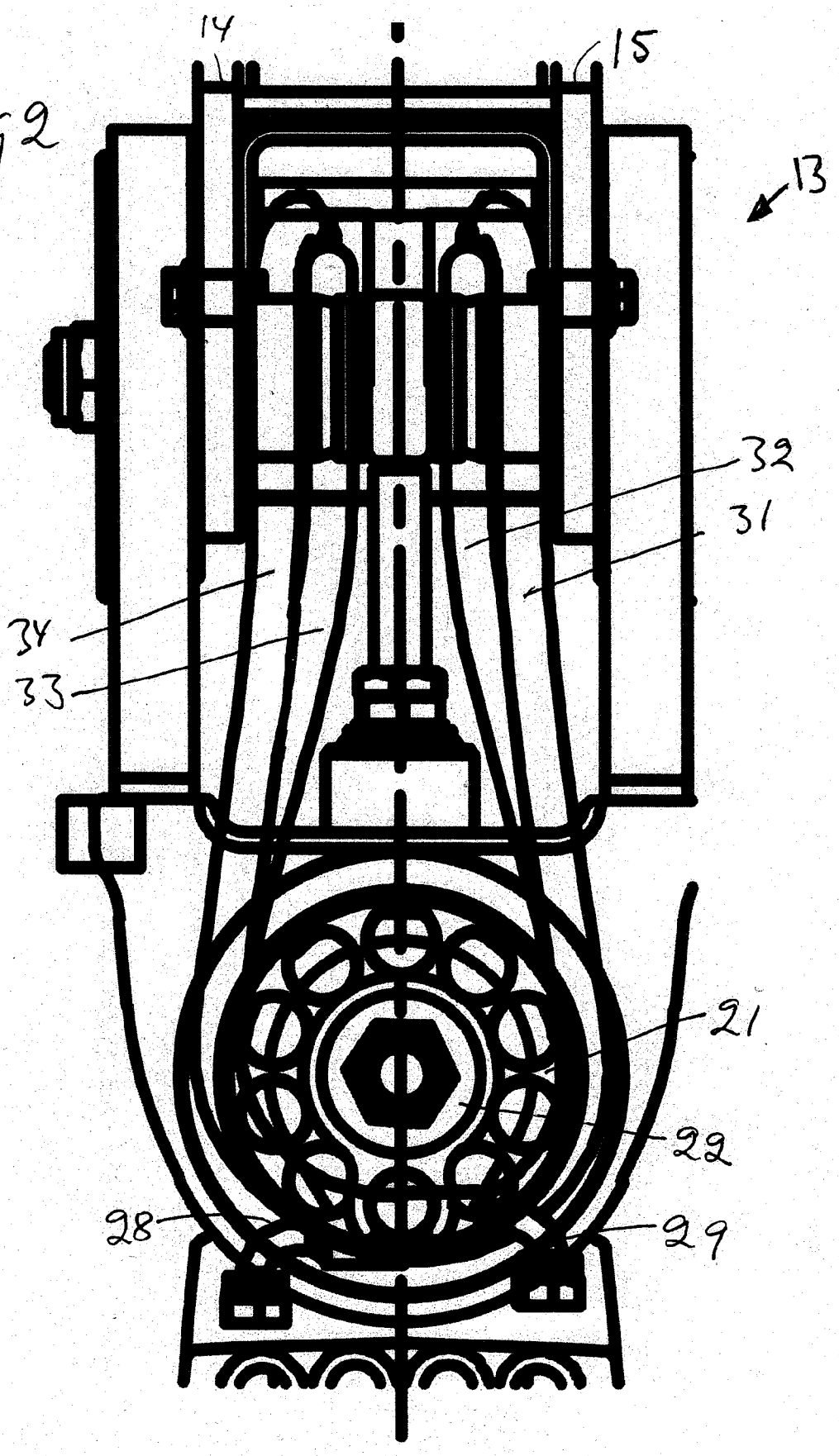


FIG 2



INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2014/050147

A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

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)

IPC: B66C, F16C, F16F, F16L, H02G

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)

EPO-Internal, PAJ, WPI data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1889808 A1 (EPSILON KRAN GMBH), 20 February 2008 (2008-02-20); abstract; paragraphs [0003], [0008]-[0011]; figures 1-4	1
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A	WO 2011142704 A1 (INDEXATOR AB ET AL), 17 November 2011 (2011-11-17); abstract; page 1, paragraph [0003] - page 1, paragraph [0003]; page 3, paragraph [0003] - page 4, paragraph [0001]; figures 2-5	1
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A	US 20050017528 A1 (EKMAN TOMMY), 27 January 2005 (2005-01-27); abstract; paragraphs [0004], [0011], [0017], [0019]; figures 1,2	1
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☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
07-05-2014	08-05-2014

Name and mailing address of the ISA/SE	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE2014/050147

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Continuation of: second sheet

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