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(54) **AN APPARATUS COMPRISING A COUPLING ARRANGEMENT**

(57) The present disclosure provides an apparatus (9) comprising a coupling arrangement (11), an input device and a control unit. The coupling arrangement (11) comprises an intermediate element (30) and a first quick coupler (31) operable to selectively couple the intermediate element (30) to a machine (10). The intermediate element (30) comprises a second quick coupler (32) operable to selectively couple a tool (15) to the intermediate element (30). The first and second quick couplers (31, 32) are each selectively actuatable to lock the intermediate element (30) to the machine (10) or tool (15) respectively. The control unit is configured to determine whether the intermediate element (30) is coupled to the machine (10) and receive an input signal from the input device. In response to the input signal the control unit restricts the unlocking of the first quick coupler (31) when the intermediate element (30) is coupled to the machine (10).

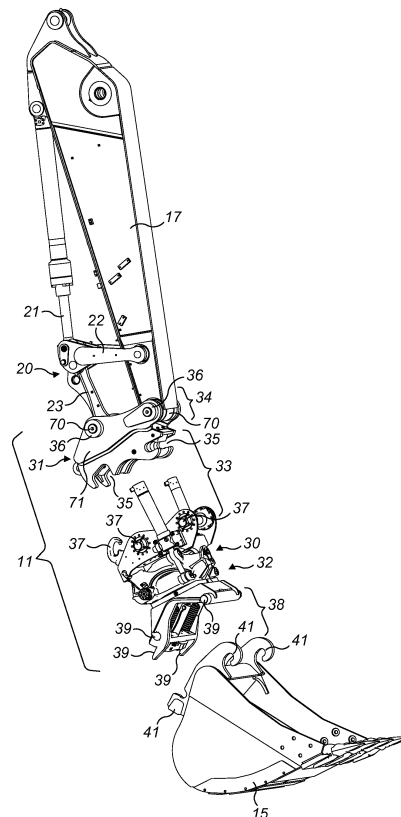


FIG. 2



EUROPEAN SEARCH REPORT

 Application Number
 EP 17 16 1895

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2014/168540 A1 (INDEXATOR GROUP AB [SE]) 16 October 2014 (2014-10-16) * figures 1, 2 , 6,7-12 * -----	1-5, 11-14	INV. E02F3/36 A01B59/06
Y	US 6 058 633 A (BARDEN WILLIAM MARK [US]) 9 May 2000 (2000-05-09) * figure 1 *	1	ADD. F16L37/00
Y	EP 2 995 725 A1 (YTF SWEDEN AB [SE]) 16 March 2016 (2016-03-16) * paragraph [0005]; figures 1,2 *	1	
Y	US 2007/130932 A1 (FATEMI RAY S [US] ET AL) 14 June 2007 (2007-06-14) * paragraph [0042]; figure 2A *	1	
X	US 2002/066215 A1 (KACZMARSKI WALLY L [US] ET AL) 6 June 2002 (2002-06-06) * figure 3 * -----	1,11	
			TECHNICAL FIELDS SEARCHED (IPC)
			E02F A01B F16L
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		1 August 2017	Pedersen, Henrik
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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 EPO FORM 1503 03.82 (P04C01)



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-5, 11-14

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).



LACK OF UNITY OF INVENTION
SHEET B

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-5, 11-14

Group I containing claims: 1-5 and 11 - 14

The potential special technical features of this group can be summarised as: control unit determining the opening and closing signals and operations

The technical effects associated with the above features are: the coupler lock/unlock function is controlled.

The objective technical problem solved by this invention could be formulated as: how to prevent accidents from operator mistakes?

2. claims: 6-9

Group II containing claims: 6 - 9

The potential special technical features of this group can be summarised as: first and second coupling element

The technical effects associated with the above features are: improved coupling

The objective technical problem solved by this invention could be formulated as: how to improve the coupling of implements?

3. claim: 10

Group III containing claims: 10

The potential special technical features of this group can be summarised as: tool orientation device

The technical effects associated with the above features are: tool changes orientation

The objective technical problem solved by this invention could be formulated as: how to reorientate a mounted tool?

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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01-08-2017

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Patent document cited in search report		Publication date	Patent family member(s)		Publication date
WO 2014168540	A1	16-10-2014	NONE		

US 6058633	A	09-05-2000	GB	2330568 A	28-04-1999
			US	6058633 A	09-05-2000

EP 2995725	A1	16-03-2016	EP	2995725 A1	16-03-2016
			SE	1451030 A1	04-03-2016

US 2007130932	A1	14-06-2007	NONE		

US 2002066215	A1	06-06-2002	AU	2022602 A	18-06-2002
			US	2002066215 A1	06-06-2002
			WO	0246538 A1	13-06-2002
