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(71) Applicant: **Casagrande SpA**
33074 Fontanafredda (PN) (IT)

(72) Inventor: **Casagrande, Mauro**
33077, Sacile (PN) (IT)

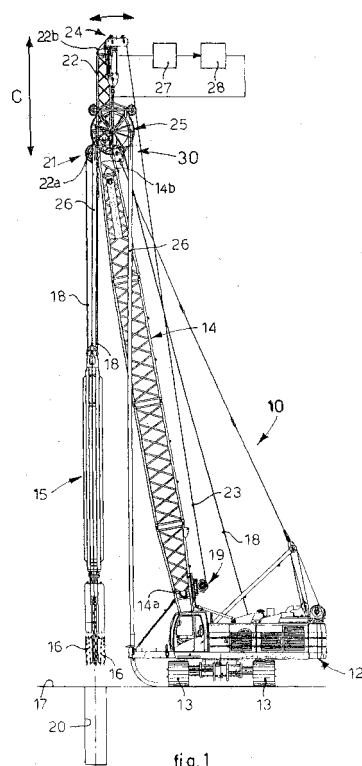
(74) Representative: **Petraz, Gilberto Luigi et al**
GLP S.r.l.
Piazzale Cavedalis 6/2
33100 Udine (IT)

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(54) **Excavation apparatus**

(57) Excavation apparatus (10) comprising excavation means (15), first support means (21) able to support and move the excavation means (15) in a substantially vertical direction, a mobile arm (14) extending upward and having a lower end (14a) connected to a cab or turret (12) and an upper end (14b) on which said first support means (21) are disposed, flexible pipes (26) comprising means to suck up and/or remove detritus and/or means to drive said excavation means (15), winding/unwinding means (25) for said flexible pipes (26), second support means (24) provided to support and move said winding/unwinding means (25) in said vertical direction. The excavation apparatus (10) comprises at least an extension element (22), oblong in shape, extending upward and provided with a lower end (22a) connected to the upper end (14b) of said mobile arm (14) and with an upper end (22b) in substantial correspondence with which said second support means (24) are disposed and supported, said extension element (22) being normally positioned in a substantially vertical direction. The distance between the upper end (14b) of the mobile arm (14) and the upper end (22b) of the extension element (22) that supports said second support means (24) defines a supplementary vertical travel of said winding/unwinding means (25) such that said flexible pipes (26) are able to extend in height to a greater extent than the extension in height of said mobile arm (14), so as to increase the depth of excavation that said excavation means (15) can achieve. Articulation means (30) are provided to connect rotatably said extension element (22) to said mobile arm (14) so that said extension element (22) is selectively mobile in

order to displace said second support means (24) in a manner coordinated with the displacement of the mobile arm (14), so as to keep said excavation means (15) vertical substantially in every operating condition, even when the depth of the excavation is increased.





EUROPEAN SEARCH REPORT

Application Number
EP 10 15 5427

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	EP 1 580 398 A (BAUER MASCHINEN GMBH [DE]) 28 September 2005 (2005-09-28)	1	INV. E02D17/13 E02F3/20 E02F3/58
A	* paragraphs [0027] - [0029]; figure 1 *	2-10	
A	JP 6 035391 U (UNKNOWN) 10 May 1994 (1994-05-10) * figure 1 *	1-10	
A	EP 0 533 558 A (SOL COMP DU [FR]) 24 March 1993 (1993-03-24) * abstract *	1-10	
A	EP 0 843 050 A (SOL COMP DU [FR] CIE DU SOL [FR]) 20 May 1998 (1998-05-20) * figure 1 *	1-10	
A	JP 4 057583 U (UNKNOWN) 18 May 1992 (1992-05-18) * figure 1 *	1-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			E02D E02F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 8 March 2012	Examiner Leroux, Corentine
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p>			

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

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The members are as contained in the European Patent Office EDP file on
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08-03-2012

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1580398	A	28-09-2005	NONE	
JP 6035391	U	10-05-1994	-----	
EP 0533558	A	24-03-1993	EP 0533558 A1	24-03-1993
			FR 2681352 A1	19-03-1993
EP 0843050	A	20-05-1998	DE 69711549 D1	08-05-2002
			DE 69711549 T2	10-10-2002
			EP 0843050 A1	20-05-1998
			FR 2755709 A1	15-05-1998
			JP 4084868 B2	30-04-2008
			JP 10176343 A	30-06-1998
JP 4057583	U	18-05-1992	-----	