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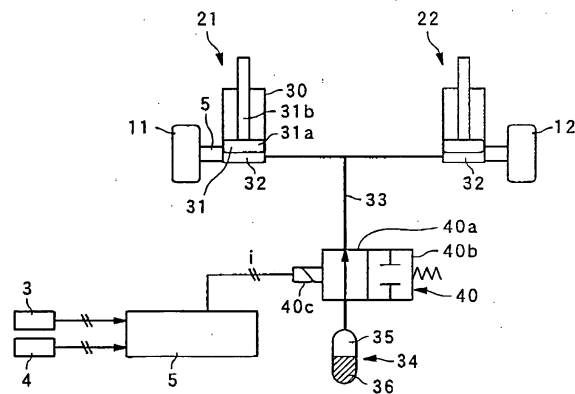
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(54) **Wheel-type construction machine**

(57) Overturning of a vehicle on an inclined road is prevented without the function of hydraulic suspension being impaired. When the current tilt angle  $\theta$  for the body (2) is equal to or smaller than the maximum tolerable tilt angle  $\theta_m$ , the inflow and outflow of hydraulic oil for the respective hydraulic suspension cylinders (21) to (24) for the wheels (11) to (14) is made free. On the other hand, when the current tilt angle  $\theta$  for the body (2) exceeds the maximum tolerable tilt angle  $\theta_m$ , the inflow and outflow of hydraulic oil for the respective hydraulic suspension cylinders (21) to (24) for the wheels (11) to (14) is locked. In a further invention, when it has been determined that the current tilt angle  $\theta$  for the body (2) exceeds the maximum tolerable tilt angle  $\theta_m$ , the vehicle height is adjusted, and the posture of the body (2) is brought to near the horizontal posture so as to be equal to or smaller than the maximum tolerable tilt angle  $\theta_m$ . In a still further invention, when it has been determined that the body (2) is tilted, the vehicle height is adjusted, and the posture of the body (2) is brought to near the horizontal posture until the body (2) is in the horizontal posture.



**FIG. 3**



European Patent  
Office

EUROPEAN SEARCH REPORT

Application Number  
EP 04 02 9058

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X,D	PATENT ABSTRACTS OF JAPAN vol. 2002, no. 04, 4 August 2002 (2002-08-04) -& JP 2001 334816 A (SUMITOMONACCO MATERIALS HANDLING CO LTD), 4 December 2001 (2001-12-04) * abstract; figures 1,2,5-8 * * paragraph [0015] * * paragraph [0026] * * paragraph [0030] * * paragraph [0034] - paragraph [0036] *	1,2	E02F9/24 E02F9/22
Y	DE 36 32 416 A1 (KARL SCHAEFF GMBH & CO,MASCHINENFABRIK; KARL SCHAEFF GMBH & CO, MASCHI) 7 April 1988 (1988-04-07) * column 7, line 68 - column 8, line 42 * * column 8, paragraph 50 - paragraph 67 * * figure 7 *	3,4	
Y	US 5 684 698 A (FUJII ET AL) 4 November 1997 (1997-11-04) * figures 1a,6-8,10,11a,15,16 * * column 6, line 12 - line 25 * * column 7, line 4 - line 18 * * column 7, line 31 - line 55 *	3,4	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
A	EP 0 919 407 A (KOMATSU LTD) 2 June 1999 (1999-06-02) * paragraph [0042] - paragraph [0043] * * paragraph [0044] - paragraph [0047]; figures 1,3,4 *	1,2	E02F B60G B62D B66C B66F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 15 August 2005	Examiner Guthmuller, J
<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  .....  &amp; : member of the same patent family, corresponding document</p>			

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

EP 04 02 9058

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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

15-08-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 2001334816	A	04-12-2001	NONE	
-----				
DE 3632416	A1	07-04-1988	NONE	
-----				
US 5684698	A	04-11-1997	JP 7276956 A	24-10-1995
			JP 7276957 A	24-10-1995
-----				
EP 0919407	A	02-06-1999	JP 10044735 A	17-02-1998
			DE 69727062 D1	05-02-2004
			DE 69727062 T2	28-10-2004
			EP 0919407 A1	02-06-1999
			WO 9805521 A1	12-02-1998
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