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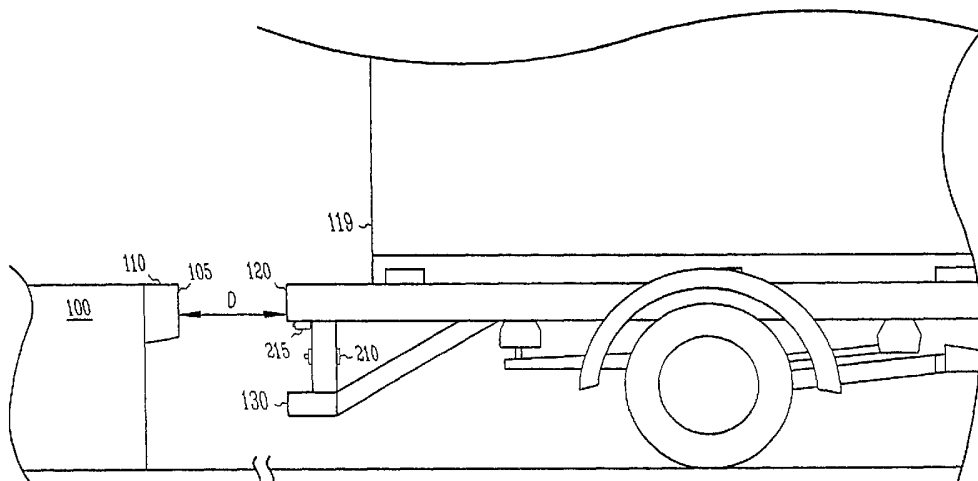
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- Published:**
- with international search report
 - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: INTELLIGENT BRAKING SYSTEM AND METHOD



(57) Abstract: A distance, speed and direction sensitive processor coupled to a brake controller. The processor executes instructions to compare actual vehicle performance with that of a deceleration profile and modulates the brake controller to bring vehicle performance into agreement with the profile. Distance information (D) is provided by a radar sensor (215) for long ranges, an ultrasonic sensor (210) for medium ranges, and a wheel rotation sensor for short ranges. Speed information is provided by a vehicle mounted sensor or calculated by the processor based on distance. Direction information is provided by a vehicle mounted switch or determined by the processor based on distance. The brake controller includes a hold valve and a dump valve, each of which is modulated with a pulse train signal.



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9 October 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

 International Application No
 PCT/US 02/40324

 A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 B60T7/22 B60K31/00 G08G1/16

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 7 B60T B60K G08G

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

Electronic data base consulted during the international search (name of data base and, where practical, 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.
X	DE 198 31 262 A (WABCO GMBH) 13 January 2000 (2000-01-13)	1-7, 12, 14-16, 19-24, 26-30, 33
Y	the whole document	8-11, 13, 18, 25, 31, 32
X	US 5 864 285 A (ZIEGLER UDO ET AL) 26 January 1999 (1999-01-26)	1-4, 6, 7, 9, 10, 12, 14-16, 19-30, 33
	column 2, line 195 -column 26; figures -/--	

 Further documents are listed in the continuation of box C.

 Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"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

26 March 2003

Date of mailing of the international search report

08.03.03

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INTERNATIONAL SEARCH REPORT

 International Application No
 PCT/US 02/40324

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 100 06 682 A (CONTINENTAL TEVES AG & CO OHG) 4 October 2001 (2001-10-04)	1-3,6, 12, 14-17, 19-24, 26, 28-30,33
Y	the whole document	8-13,18, 19,25, 27,31,32
X	DE 198 07 748 A (DAIMLER CHRYSLER AG) 2 September 1999 (1999-09-02)	1-3,5,6, 9,14-18, 20-24, 26, 28-30,33
X	column 2, line 47 -column 3, line 41; figures	
X	DE 100 11 777 A (CONTINENTAL TEVES AG & CO OHG) 16 November 2000 (2000-11-16)	1-3, 14-17, 26,29,33
Y	column 1, line 13 -column 3, line 59	
Y	GB 2 309 555 A (ROVER GROUP) 30 July 1997 (1997-07-30) page 7, line 1 -page 7, line 22 page 11, line 1 -page 11, line 8 page 14, line 5 -page 14, line 18	9-11,18
Y	DE 40 40 894 C (ELTRO GMBH) 30 April 1992 (1992-04-30) column 1, line 7 -column 1, line 24 column 2, line 31 -column 2, line 48	9-11
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Y	DE 195 43 582 A (DAIMLER BENZ AG) 5 June 1997 (1997-06-05) column 5, line 5 -column 5, line 11 column 6, line 14 -column 6, line 49	25,31,32

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-33

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-33

Brake activation based on comparison of range data (distance data, obstacle information) and vehicle speed.

2. Claims: 34-41

Brake activation to restrict vehicle movement based on data on vehicle speed, direction and condition.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 02/40324

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