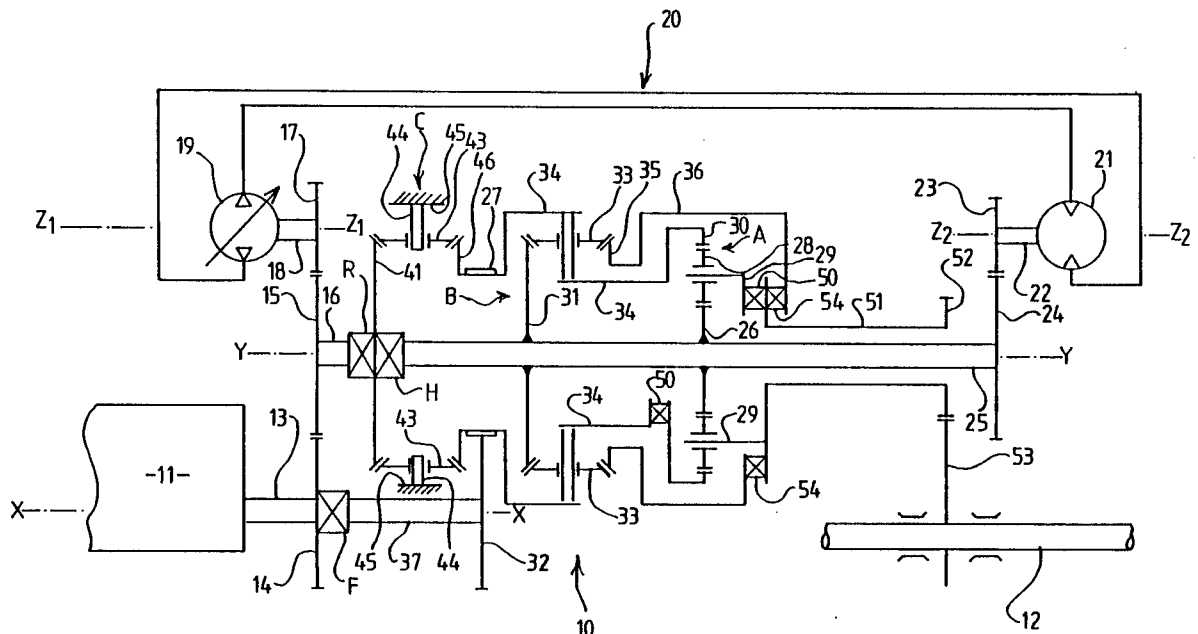




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁵ : F16H 47/04, 3/66</p>	<p>A3</p>	<p>(11) International Publication Number: WO 94/08156 (43) International Publication Date: 14 April 1994 (14.04.94)</p>
<p>(21) International Application Number: PCT/GB93/02073 (22) International Filing Date: 6 October 1993 (06.10.93) (30) Priority data: 9220971.7 6 October 1992 (06.10.92) GB 9220969.1 6 October 1992 (06.10.92) GB (71) Applicant (for all designated States except US): J. C. BAMFORD EXCAVATORS LIMITED [GB/GB]; Rocester, Staffordshire ST14 5JP (GB). (72) Inventors; and (75) Inventors/Applicants (for US only) : MOELLER, Frank [DE/GB]; The Paddock, 182 Main Road, Milford, Stafford ST17 0UN (GB). TURNER, William, Stanley [GB/GB]; 32 Holly Road, Uttoxeter, Staffordshire ST14 7NY (GB). HICKS, Raymond, John [GB/GB]; Glandedn Bungalow, Cregrina, Llandrindod Wells, Powys LD1 5SF (GB).</p>		<p>(74) Agent: FORRESTER KETLEY & CO.; Chamberlain House, Paradise Place, Birmingham B3 3HP (GB). (81) Designated States: CA, GB, JP, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. (88) Date of publication of the international search report: 09 June 1994 (09.06.94)</p>

(54) Title: INFINITELY VARIABLE TRANSMISSION WITH POWER SPLITTING



(57) Abstract

An infinitely variable drive transmission with power splitting comprising an input member (13), a summing gear set (A, B), a variable speed transmission (20) having an input element (18) drivable by said input member (13) and an output element (22), a drive transmitting means (C); the output element (22) of the variable speed transmission (20) being connectable to one element (26, 31) of the summing gear set (A, B) to provide a first path between the input member (13) and the summing gear set (A, B). The input member (13) being connectable to another element (34) of the summing gear set (A, B) to provide a second path between the input member (13) and the summing gear set (A, B), the drive transmitting means (C) being connectable between the output element (22) of the variable speed transmission (20) and said other element (34) of the summing gear set (A, B).

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 5 F16H47/04 F16H3/66

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 5 F16H

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,A,22 27 718 (ORSHANSKY) 28 December 1972 see page 20 - page 22; figure 1 ---	1,3-5, 7-10,44
X	DE,A,27 24 965 (SUNDSTRAND) 7 December 1978 see page 15 - page 16; figure 5 ---	1,3-5, 7-10,44
A	DE,A,26 25 740 (DRÄGER) 15 December 1977 see the whole document ---	1,7-9, 20,25
A	EP,A,0 460 584 (HURTH) 11 December 1991 see page 1; figure 1 ---	1,27,28
A	WO,A,89 09353 (Z.F.) 5 October 1989 see abstract; figures 1-16 ---	1-26
	-/--	

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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- *&* document member of the same patent family

Date of the actual completion of the international search

12 April 1994

Date of mailing of the international search report

27.04.94

Name and mailing address of the ISA

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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,A,24 29 268 (NISSAN) 16 January 1975 see page 7 - page 8; figures 2,5,7 ----	30,32, 33,35, 40-43
X	FR,A,1 304 080 (FERODO) 13 August 1962 see page 2; figure 1 ----	30,32, 33,40, 42,43
A	US,A,4 802 385 (NISSAN) 7 February 1989 see column 2 - column 3; figures 1,2 ----	30,32, 33, 35-38, 40-43
A	FR,A,938 913 (LORDAT) 28 October 1946 see page 1; figures 1-6 ----	30,31
A	FR,A,509 738 (DEVELAY) 18 November 1920 see figures 4,6 -----	30,32-34

INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB93/02073

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:

- Claims 1-29, 44-46
- Claims 30-43

See PCT/ISA/206 sent 26.1.94

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.
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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.:

Remark on Protest

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

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 93/02073

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE-A-2227718	28-12-72	CA-A- 985529 FR-A, B 2143154 GB-A- 1364962	16-03-76 02-02-73 29-08-74
DE-A-2724965	07-12-78	NONE	
DE-A-2625740	15-12-77	NONE	
EP-A-0460584	11-12-91	US-A- 5211610	18-05-93
WO-A-8909353	05-10-89	DE-A- 3909940 EP-A, B 0397804 JP-T- 3503562 US-A- 5277670	12-10-89 22-11-90 08-08-91 11-01-94
DE-A-2429268	16-01-75	JP-A- 50022165 GB-A- 1432883 US-A- 3899940	10-03-75 22-04-76 19-08-75
FR-A-1304080		NONE	
US-A-4802385	07-02-89	JP-B- 5087702 JP-A- 62088851	17-12-93 23-04-87
FR-A-938913		NONE	
FR-A-509738		NONE	