

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
26 February 2004 (26.02.2004)

PCT

(10) International Publication Number
WO 2004/016414 A3

(51) International Patent Classification⁷: **B29D 30/06**,
B29C 33/20

(21) International Application Number:
PCT/US2003/024770

(22) International Filing Date: 7 August 2003 (07.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/222,742 16 August 2002 (16.08.2002) US

(71) Applicant and

(72) Inventor: **COLE, John, R.** [US/US]; 1033 Top of the Hill,
Akron, OH 44333 (US).

(74) Agents: **EMERSON, Roger** et al.; Brouse McDowell, 500
First National Tower, Akron, OH 44308-1471 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,

GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

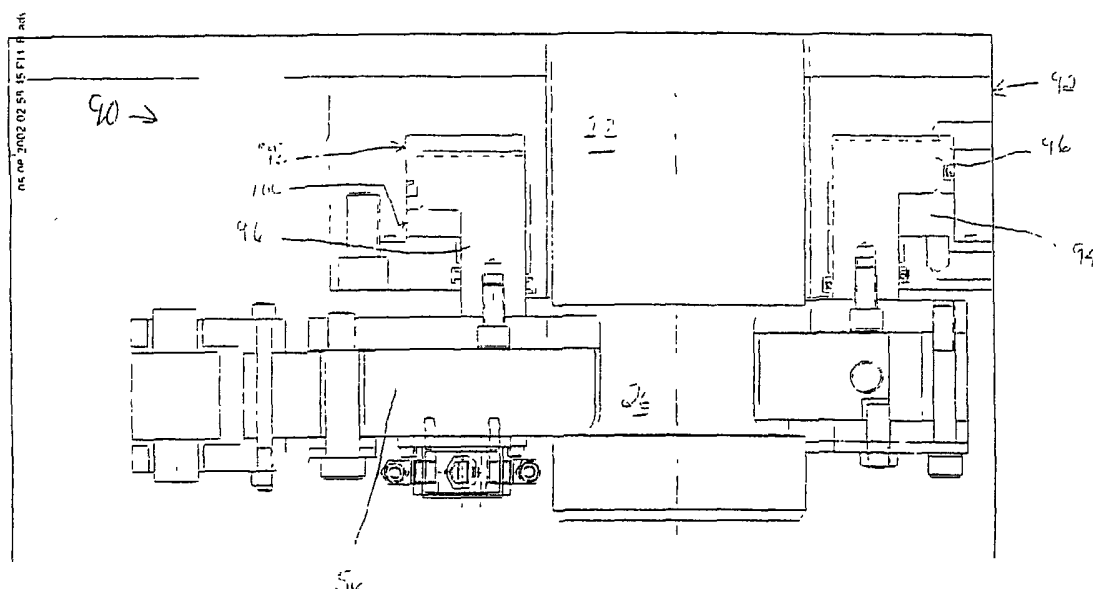
Published:

- 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

(88) Date of publication of the international search report:
26 August 2004

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

(54) Title: AN APPARATUS AND METHOD FOR LOCKING A TIRE VULCANIZING PRESS



(57) Abstract: A tire press (10) has an upper mold (14) fixedly attached to a top plate (12) and a bottom mold (18) fixedly attached to a bottom plate (16). The tire press has a plurality of guide posts (20) adapted to maintain proper alignment of the upper mold and the bottom mold as the tire press opens and closes. A plurality of lock rods (22), which are independent of the guide posts, are positioned about the tire press. The lock rods may have an adjustment mechanism (28) positioned on the first end of the lock rods to adjust the various mold heights. Locking means (54) are adapted to selectively engage the second end of the lock rods (22). Further, each of the lock rods has cylinder mechanism (90) operatively connected to the locking means. The tire press further comprises a tire loader assembly which travels up and down with the top plate.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/24770

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B29D30/06 B29C33/20

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 B29D B29C B30B

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)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 540 081 A (CARRIERI LOUIS F ET AL) 17 November 1970 (1970-11-17) the whole document -----	1-9
X	US 4 601 648 A (KURUMAJI MASANOBU ET AL) 22 July 1986 (1986-07-22) column 4, line 15 - column 6, line 53; figures 4-8 -----	1,3-5, 7-13
X	US 2002/086088 A1 (ROMI ROMEU) 4 July 2002 (2002-07-04) the whole document -----	1-9
X	US 5 238 394 A (HIRATA HISAKAZU) 24 August 1993 (1993-08-24) the whole document -----	1-9
	-/--	

☒ 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

6 July 2004

Date of mailing of the international search report

14. 07. 2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Fregosi, A

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 03/24770

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 488 261 A (BRIDGESTONE CORP) 3 June 1992 (1992-06-03) the whole document -----	1-13
A	US 4 130 384 A (MACMILLAN KENNETH T) 19 December 1978 (1978-12-19) the whole document -----	1-13
A	FR 1 314 771 A (BRUNOTTE & NIEMEYER MASCHINENF) 11 January 1963 (1963-01-11) the whole document -----	1-13
X	US 5 683 726 A (MITAMURA HISASHI ET AL) 4 November 1997 (1997-11-04) column 5, line 58 - line 60 column 5, lines 38-41 column 6, line 17 - line 27; figure 5 -----	14-22
X	US 2 911 670 A (SODERQUIST LESLIE E) 10 November 1959 (1959-11-10) column 4, line 34 - column 5, line 5; figures 4-9 -----	14-18
X	US 3 936 251 A (BILLEY MICHEL) 3 February 1976 (1976-02-03) the whole document -----	14-22
X	EP 0 468 344 A (BRIDGESTONE CORP) 29 January 1992 (1992-01-29) column 2, line 42 - column 3, line 28; figure 1 -----	14-20
X	WO 00/35665 A (MCKEE DAVID JOHN ; EIZENZIMMER GEORGE WILLIAM (US); FLEDDERJOHANN PAUL) 22 June 2000 (2000-06-22) page 18, line 35 - page 19, line 14; figure 5a -----	23-26

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/24770

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:

see additional sheet

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.:

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: 1-13

A locking device

2. claims: 14-26

A tyre unloading mechanism and a tyre loading mechanism for a press.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/24770

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3540081	A	17-11-1970	DE 1758408 A1 FR 1577471 A GB 1159239 A SE 352004 B	22-10-1970 08-08-1969 23-07-1969 18-12-1972
US 4601648	A	22-07-1986	NONE	
US 2002086088	A1	04-07-2002	BR 0103955 A EP 1225026 A1	02-04-2002 24-07-2002
US 5238394	A	24-08-1993	JP 1899244 C JP 4084656 A JP 6022740 B	27-01-1995 17-03-1992 30-03-1994
EP 0488261	A	03-06-1992	IT 1241326 B EP 0488261 A1 JP 6339928 A US 5186953 A	10-01-1994 03-06-1992 13-12-1994 16-02-1993
US 4130384	A	19-12-1978	NONE	
FR 1314771	A	11-01-1963	NONE	
US 5683726	A	04-11-1997	JP 2862795 B2 JP 7314451 A JP 2896082 B2 JP 7314455 A JP 2825218 B2 JP 7314452 A CN 1127699 A ,B CZ 9501325 A3 DE 69522043 D1 DE 69522043 T2 EP 0684126 A2 KR 155224 B1	03-03-1999 05-12-1995 31-05-1999 05-12-1995 18-11-1998 05-12-1995 31-07-1996 17-01-1996 13-09-2001 29-05-2002 29-11-1995 01-12-1998
US 2911670	A	10-11-1959	DE 1178204 B FR 1210809 A GB 840250 A	17-09-1964 10-03-1960 06-07-1960
US 3936251	A	03-02-1976	FR 2266591 A1 BE 826234 A1 CS 182836 B2 DE 2514826 A1 GB 1466997 A IT 1029985 B JP 915096 C JP 50148487 A JP 52043752 B LU 72027 A1 NL 7503316 A SU 639430 A3	31-10-1975 30-06-1975 31-05-1978 09-10-1975 16-03-1977 20-03-1979 21-07-1978 28-11-1975 01-11-1977 20-08-1975 07-10-1975 25-12-1978
EP 0468344	A	29-01-1992	IT 1240507 B DE 69112947 D1 DE 69112947 T2 EP 0468344 A1 ES 2077735 T3	17-12-1993 19-10-1995 11-04-1996 29-01-1992 01-12-1995

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/24770

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0468344	A	JP 3190375 B2	23-07-2001
		JP 4226305 A	17-08-1992
		US 5206031 A	27-04-1993

WO 0035665	A	22-06-2000	WO 0035665 A2
			AU 1919199 A
			BR 9816089 A
			CA 2354403 A1
			DE 69812192 D1
			DE 69812192 T2
			EP 1140477 A2
			JP 2002532284 T
			US 6499980 B1
			ZA 9907449 A
			05-06-2000
