



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**20.12.2000 Bulletin 2000/51**

(51) Int Cl.7: **B02C 17/14**

(43) Date of publication A2:  
**03.05.2000 Bulletin 2000/18**

(21) Application number: **99307872.4**

(22) Date of filing: **06.10.1999**

(84) Designated Contracting States:  
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU**  
**MC NL PT SE**  
 Designated Extension States:  
**AL LT LV MK RO SI**

(72) Inventor: **Murray, Alastair Scott**  
**Huntly, Aberdeenshire AB54 4PT (GB)**

(74) Representative: **Pattullo, Norman et al**  
**Murgitroyd and Company**  
**373 Scotland Street**  
**Glasgow G5 8QA (GB)**

(30) Priority: **06.10.1998 GB 9821638**

(71) Applicant: **QED International Limited**  
**Huntly, Aberdeenshire AB54 8JZ (GB)**

(54) **Method of and apparatus for grinding material**

(57) A method of and an apparatus for grinding material is described, a vessel (1) for containing a grinding medium such as a ball charge (4). A means (13) for imparting a vibration force upon the vessel (1) is also provided.

The vessel (1) has an inlet (5;6;18) to permit the material to be ground to be input into the vessel (1), and an outlet (5;6;18) to permit the ground material to exit the vessel (1). The inlet (5;6;18) and the outlet (5;16;18) are vertically spaced apart.

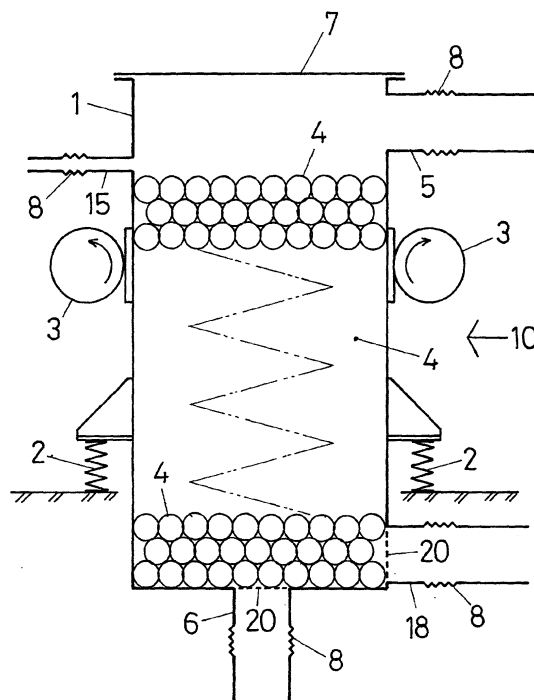


FIG. 1



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 99 30 7872

| 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   | EP 0 451 290 A (KANSAI JARI KK)<br>16 October 1991 (1991-10-16)  | 1-7,9,<br>10,12                                     | B02C17/14   |
| Y   | * column 4, line 12 - column 5, line 20 *<br>* column 8, line 15 - line 25; figures 1,6 *  | 11,13-15  |   |
| X   | US 4 047 672 A (VOLKOV VLADIMIR<br>VLADIMIROVICH ET AL)<br>13 September 1977 (1977-09-13)<br>* column 4, line 1 - column 6, line 28;<br>figure 1 * | 1-4,9,12  |   |
| X   | GB 1 089 337 A (FARBENFABRIKEN BAYER AG)<br>1 November 1967 (1967-11-01)<br>* page 3, line 57 - page 4, line 11;<br>figures *                      | 1-3,12  |   |
| Y   | US 4 739 938 A (ISHIKAWA TSUYOSHI ET AL)<br>26 April 1988 (1988-04-26)<br>* column 2, line 59 - column 3, line 10;<br>figure 1 *                   | 11  |   |
| Y   | US 4 480 702 A (KELLY JR JOHN)<br>6 November 1984 (1984-11-06)<br>* column 4, line 21 - line 45 *  | 13-15   | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.7)<br>B02C<br>E21B |
| The present search report has been drawn up for all claims  |  |   |   |
| Place of search<br>MUNICH   |  | Date of completion of the search<br>20 October 2000 | Examiner<br>Bunn, D                                     |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone<br/>Y : particularly relevant if combined with another document of the same category<br/>A : technological background<br/>O : non-written disclosure<br/>P : intermediate document</p> <p>T : theory or principle underlying the invention<br/>E : earlier patent document, but published on, or after the filing date<br/>D : document cited in the application<br/>L : document cited for other reasons<br/>&amp; : member of the same patent family, corresponding document</p> |  |   |   |

EPO FORM 1503 03/02 (P04C31)

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

EP 99 30 7872

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.

20-10-2000

| Patent document<br>cited in search report | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|---|---------------------|----------------------------|---------------------|
| EP 0451290 A                              | 16-10-1991          | JP 3146181 A               | 21-06-1991          |
|   |                     | AU 6609090 A               | 31-05-1991          |
|   |                     | WO 9106370 A               | 16-05-1991          |
| US 4047672 A                              | 13-09-1977          | NONE                       |                     |
| GB 1089337 A                              |                     | BE 654251 A                | 01-02-1965          |
|   |                     | CH 464655 A                |                     |
|   |                     | DK 119340 B                | 14-12-1970          |
|   |                     | IL 22152 A                 | 25-04-1968          |
|   |                     | NL 6411859 A               | 13-04-1965          |
| US 4739938 A                              | 26-04-1988          | NONE                       |                     |
| US 4480702 A                              | 06-11-1984          | CA 1190528 A               | 16-07-1985          |
|   |                     | GB 2112049 A,B             | 13-07-1983          |
|   |                     | NL 8204793 A               | 01-07-1983          |
|   |                     | NO 824172 A                | 13-06-1983          |

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82