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(72) Inventors:
• **Culver, Larry G.**
Alberta T8A 2G5 (CA)
• **Gillard, Ray W.**
Fort Saskatchewan T8L 2N9 (CA)

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(74) Representative: **Robinson, Ian Michael et al**
Appleyard Lees,
15 Clare Road
Halifax HX1 2HY (GB)

(71) Applicant: **Road Badger Inc.**
Edmonton, Alberta T6E 5X3 (CA)

(54) **Ground working device**

(57) A ground working device is formed from a sub-frame (18) having a first side and a second side, plural discs (28) mounted for rotation on the sub-frame between the first side and the second side about an axis that extends from the first side to the second side; and a set of scoops (42) mounted on each disc in ground contacting position. The scoops efficiently lift the ground surface material, which falls to the ground in a sorted manner with coarser material on top. A motor is operatively connected to the plural discs for rotating the discs about the axis. Each scoop in each set of scoops has a ground working face that extends transversely to the disc on which the respective scoop is mounted. The scoops each have concave ground contacting surfaces. Each scoop is received in a respective slot (37) in the disc in which the respective scoop is mounted. The

ground working device is mounted on a main frame, which is provided with ground engaging wheels. The sub-frame is retractably mounted on the main frame. Plural individually retractable teeth (118) are secured to the frame and extend away from the lower part of the frame in a ground contacting array. Teeth for the ground working device are formed as part of a retractable tooth assembly (110). A retractable tooth assembly preferably comprises a tooth carrier (112) on one end of which a tooth is slidably mounted, and on the other end of which is mounted a tooth position fixative, with a position adjustable rigid link connecting the tooth position fixative and the tooth. The retractable tooth assembly preferably extends through the frame from a first side to a second side, the retractable tooth assembly being secured to the frame on the first side and the tooth forming a working end on the second side.

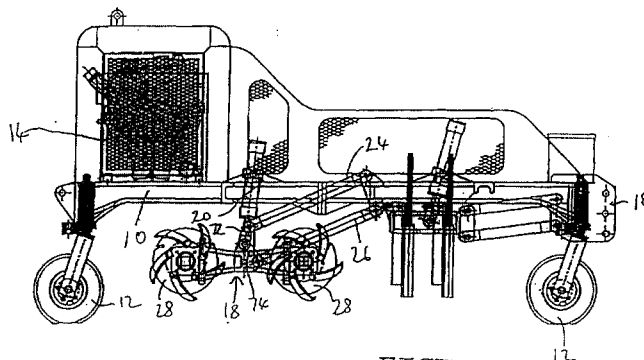


FIGURE 1

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EUROPEAN SEARCH REPORT

Application Number
EP 00 30 7080

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	DE 30 43 175 A (WEICHEL ERNST) 7 October 1982 (1982-10-07) * page 8, last paragraph *	1-4, 6-10,25	E01C23/088 E01C23/082 E01C21/00
A	* page 9, paragraph 2 - page 11, paragraph 2; figures *	5	
X	GB 1 313 744 A (ROTARY HOES LTD) 18 April 1973 (1973-04-18) * page 2, line 10 - line 115; figures *	1-3,6-9	
X	US 1 970 531 A (NEWTON PAUL J ET AL) 14 August 1934 (1934-08-14) * page 1, line 89 - page 2, line 98 *	25-32, 34,35	
A	* page 3, line 21 - line 30; figures *	33	
A	US 4 793 733 A (CHIBA TATSUHIKO ET AL) 27 December 1988 (1988-12-27) * column 4, line 18 - column 5, line 7; figures 1-3,6 *	1,25,26, 35	
D,A	US 5 795 096 A (CULVER LARRY G) 18 August 1998 (1998-08-18) * column 2, line 31 - line 60; figures 3-5 *		TECHNICAL FIELDS SEARCHED (Int.Cl.7) E01C A01B E02F
-The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18 November 2002	Examiner Movadat, R
CATEGORY OF CITED DOCUMENTS 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		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 & : member of the same patent family, corresponding document	

EPO FORM 1503 (6.92) (P04/C01)



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☒ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

11-24

- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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**LACK OF UNITY OF INVENTION
SHEET B**

Application Number
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-10

Road resurfacing device comprising plural discs with a set of scoops

2. Claims: 25-35

Ground working device comprising plural individually retractable teeth

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

EP 00 30 7080

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
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18-11-2002

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