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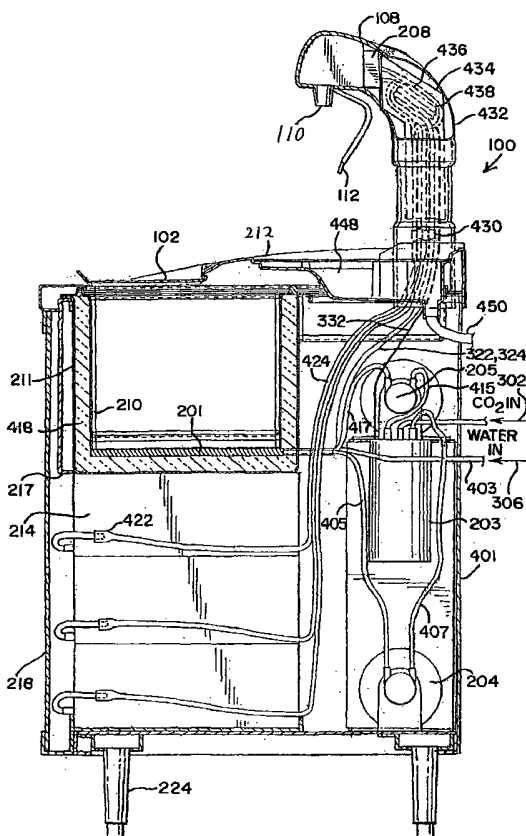
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[Continued on next page]

(54) Title: LOW VOLUME BEVERAGE DISPENSER



(57) Abstract: An apparatus for low volume dispensing of soft drinks preferably uses no mechanical refrigeration equipment, depending instead on heat transfer from a bin of ice to cool water and soft-drink syrup for beverages. A heat-exchange plate desirably includes transfer lines for incoming water to and from a carbonator. A portion of the heat exchange plate, or a second heat exchange plate, includes transfer lines for syrup and for carbonated water. The carbonated water is used to cool the syrup through the second heat exchange plate, and is also mixed with the syrup to dispense a soft drink. Heat from the incoming water and syrup is removed by melting ice in the ice bin, which may be replenished as needed.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/28307**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) :B67D 5/56

US CL :62/390, 59; 222/129.1, 146.6

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)

U.S. : 62/389, 390, 59; 222/129.1, 146.6

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
None

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y --- A	US 5,230,448 A (STROHMEYER et al) 27 July 1993, column 3, lines 1-18 and 38-49.	1-8, 13, 15-17, 19, 21, 23, 30-43 ----- 9-12, 14, 18, 20, 22
Y	US 4,979,647 A (HASSELL) 25 December 1990, column 3, lines 22-26.	1-8, 13, 15-17, 19, 21, 23
Y --- A	US 5,319,947 A (FISCHER) 14 June 1994, column 1, line 52 to column 2, line 17.	2, 3, 13, 15, 46, 48-53 ----- 49

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier document published on or after the international filing date	"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
"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)	"&"	document member of the same patent family
"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		

Date of the actual completion of the international search

20 FEBRUARY 2003

Date of mailing of the international search report

08 MAY 2003

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/28307

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,743,107 A (KYEES) 28 April 1998, column 7, line 44 to column 8, line 20.	30-43
A	US 5,249,710 A (HASSELL et al) 05 October 1993, see the entire document.	1-23, 30-43, 46-53
A	US 5,524,452 A (HASSELL et al) 11 June 1996, see the entire document.	1-23, 30-43, 46-53
A	US 6,045,007 A (SIMMONS) 04 April 2000, see the entire document.	1-23, 30-43, 46-53
A,E	US 6,505,758 B2 (BLACK et al) 14 January 2003, see the entire document.	1-23, 30-43, 46-53
A,E	US 6,463,753 B1 (HASKAYNE) 15 October 2002, see the entire document.	1-23, 30-43, 46-53

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/28307

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

This international 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:

Please See Extra 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.:
30-43 and 46-53
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

International application No.

PCT/US02/28307

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I, claim(s) 1-23, drawn to a beverage dispenser having a container of syrup within the housing.

Group II, claim(s) 24-29, drawn to a method of producing and dispensing a beverage.

Group III, claim(s) 30-43, drawn to a beverage dispenser having a tower heat exchanger.

Group IV, claims 44-45, drawn to a beverage dispensing tower.

Group V, claims 46-53, drawn to a beverage dispenser having a split heat exchanger.

Group VI, claims 54-57, drawn to a beverage dispenser having a heat exchanger having one coil for cooling syrup and another coil for cooling beer.

The inventions listed as Groups I-VI do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: none of the groups have any commonly recited special technical features.