(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 174 170**
A3

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **85306182.8**

(22) Date of filing: **30.08.85**

(51) Int. Cl.³: **F 25 D 17/02**

(43) Date of publication of application:
12.03.86 Bulletin 86/11

(88) Date of deferred publication of search report: **08.06.88**

(84) Designated Contracting States:
BE CH DE FR GB IT LI NL

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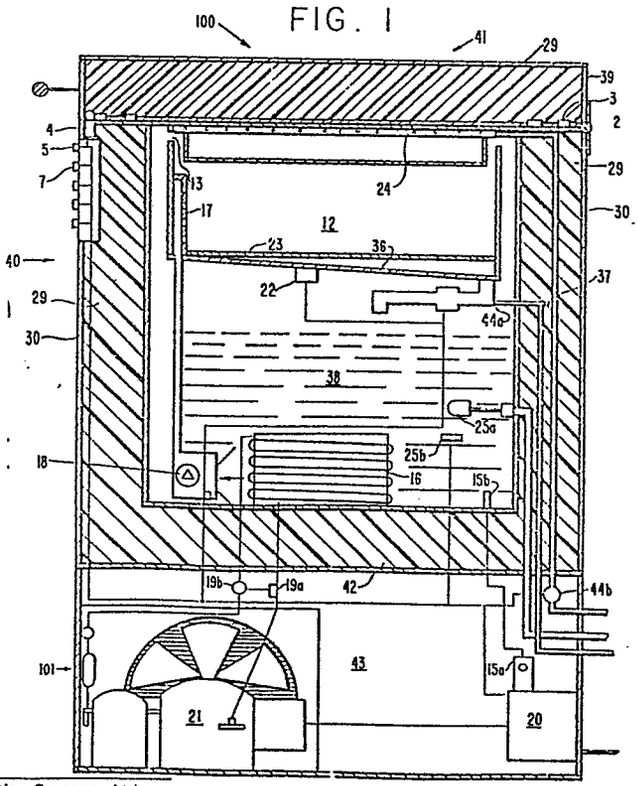
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(54) Method and apparatus for chilling and freezing articles.

(57) A unit useful for the rapid chilling and/or freezing of small articles, such as beverage cans, other perishable items, other articles desired to be chilled or frozen, and the like products, including an insulated container (40) with a lid (41) therefor, a refrigerator unit (101), heat removing coils (16) disposed within a holding tank for liquid coolant (38); a product chamber (12) above, below or near the coolant holding tank; a pump (18) to move the coolant (38) to or away from the product chamber (12); various means to draw the fluid in or out of the product chamber by means of solenoid valves (44A, 44B) or drain holes (37); a vibrator (22), air blast, rinse cycle to remove undesirable residues; and timer means (5) for controlling the length of time the coolant is within the product and the length of the drain cycle.

The method of rapidly chilling or freezing articles comprising the steps of: chilling a liquid (38) substantially below the freezing temperature of water by refrigeration evaporator coils, said liquid having a very low surface tension, and low residue depositing, such as the family of liquid fluorocarbon chemicals, various alcohol and water formulations ranging from 40% to 60% alcohol which has properties similar to the family of liquid fluorocarbons, being non-toxic and nearly odorless, immersing the article to be chilled or frozen into the liquid for a desired period of time, and removing said article therefrom; or in the event of other coolants than those mentioned above are used which leave an undesirable residue, incorporating a rinse cycle to wash away the residue.

FIG. 1



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EUROPEAN SEARCH REPORT

0174170

Application Number

EP 85 30 6182

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.4)
Y	AT-B- 292 754 (HAUSER) * Page 2, line 24 - page 3, line 28; figures 1,2 *	1,2,8-10	F 25 D 17/02
A		13	
Y	US-A-2 655 007 (LAZAR) * Column 2, line 32 - column 5, line 37; figures 1-10 *	1,2,8-10	
A	GB-A-1 396 379 (MK REFRIGERATION) * Page 1, line 85 - page 3, line 24; figures 1,2 *	1,2,8-10	
A	GB-A-1 481 537 (DOUST) * Page 1, line 16 - page 4, line 102; figures 1-11 *	1,2,8-10	
A	FR-A-1 381 430 (VILLATE) * Page 1, right-hand column, last paragraph - page 2, left-hand column, paragraph 2; figure 1 *	1,2,8-10	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	FR-A-2 441 345 (ELECTRICITE DE FRANCE) * Page 3, line 36 - page 7, line 26; figures 1,2 *	1,2,8-10	F 25 D A 47 F
A	GB-A-1 537 821 (MK REFRIGERATION) * Page 1, line 48 - page 2, line 75; figures 1,2 *	1,2,8-11	
A	US-A-2 342 706 (TANKERSLEY) * Page 1, right-hand column, line 3 - page 2, right-hand column, line 42; figures 1,2 *	1,4,8,9,14	

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	29-02-1988	BOETS A.F.J.

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EPO FORM 1503 03.82 (P0401)

0174170

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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.4)
A	US-A-2 427 869 (McMICHAEL) * Column 2, line 33 - column 6, line 63; figures 1-6 *	1,5,8, 15,16	
A	US-A-2 080 103 (ZAROTSCHENZEFF) * Page 2, right-hand column, lines 17-30; figure 2 *	3,12	
A	US-A-2 876 558 (LOWE) * Column 5, lines 9-12,44-50 *	7,18-20	
A	US-A-3 888 092 (FISHER)		
A	US-A-2 496 304 (MUFFLY)		
A	CA-A-1 081 486 (ELFERT)		
A	US-A-2 059 970 (ROBILLARD)		
A	US-A-4 245 483 (MURAI)		

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

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