

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 426 716 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
09.06.2004 Bulletin 2004/24

(51) Int Cl. 7: F25D 25/02, F25D 23/04

(21) Application number: 03104561.0

(22) Date of filing: 05.12.2003

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

(30) Priority: 05.12.2002 IT MI20022576

(71) Applicant: SMEG S.p.A.
I-42016 Guastalla (IT)

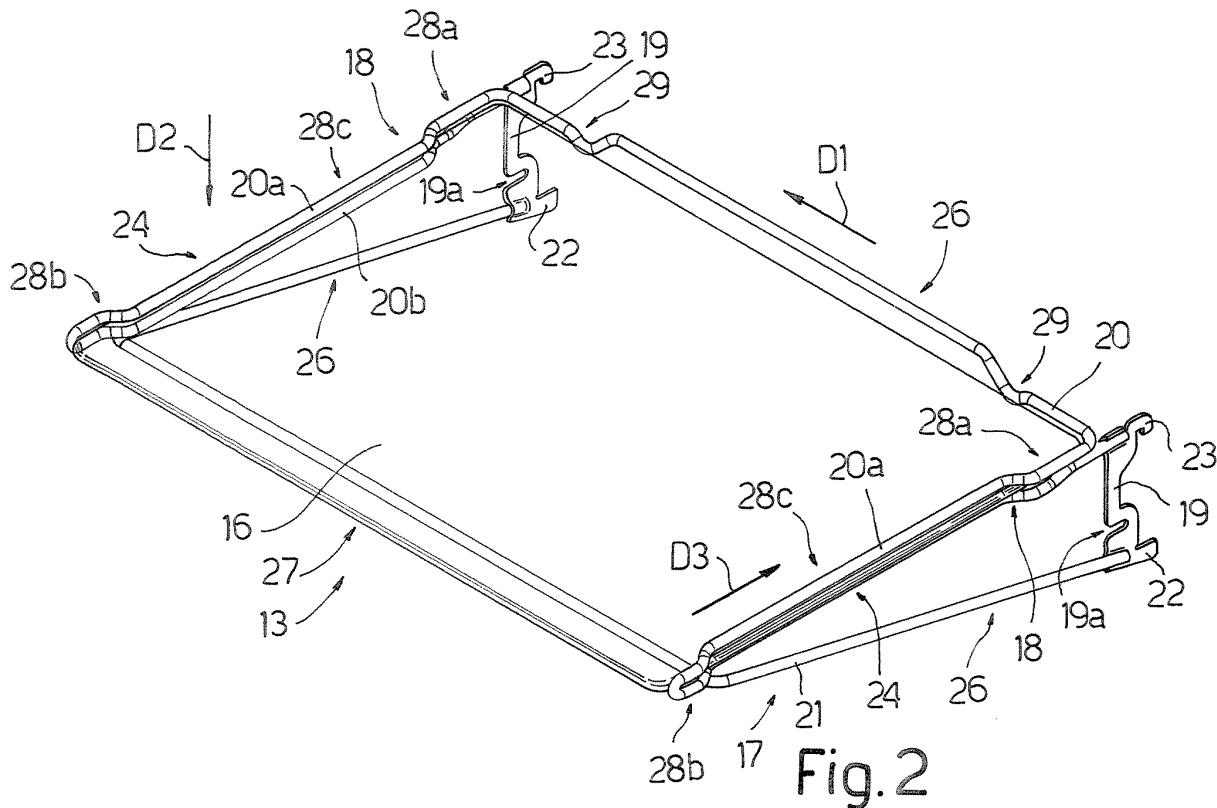
(72) Inventor: VALENZA, Giacomo
46029, SUZZARA (IT)

(74) Representative: Jorio, Paolo, Dr. Ing. et al
Studio Torta S.r.l.,
Via Viotti, 9
10121 Torino (IT)

(54) Refrigerator

(57) A refrigerator has a refrigeration compartment (4) defined by a number of walls (7, 8, 9, 10, 11); a supporting member (16; 30) for supporting foodstuffs and food containers, and selectively insertable inside the refrigeration compartment (4); and a structure (17; 31) fixable to at least one of the walls (7, 8, 9, 10, 11) and hav-

ing a seat (18; 39) for housing the supporting member (16; 30); the structure (17; 31) and the supporting member (16; 30) being connectable to each other to define a definite position of the supporting member (16; 30) inside the structure (17; 31) inside the refrigeration compartment (4).



Description

[0001] The present invention relates to a refrigerator.
[0002] A refrigerator normally comprises a refrigeration compartment enclosed by a main body and by a door hinged to the main body. That is, the compartment is defined by a bottom wall, a rear wall, two lateral walls, a top wall, and a front wall defined by the refrigerator door. A refrigerator compartment is equipped with substantially two types of fixtures : shelves and containers, for supporting foodstuffs.

[0003] A shelf is normally defined by a sheet of glass or Plexiglas, and by a rim made of plastic material, surrounding all or part of the sheet, and molded about the sheet to form one piece with it. And the lateral walls of the refrigeration compartment have a number of grooves which cooperate with the rim to support the shelf.

[0004] A container is normally located along the inner face of the door wall, and is defined partly by the door wall itself, and partly by a half-shell made of plastic and which fits onto the door wall.

[0005] Both the above types of fixtures are unhygienic, by dirt collecting, in the case of the shelves, in the joins between the sheet and rim, and, in the case of the containers, in the joins between the door and the half-shell.

[0006] The above drawback is further compounded by dirt collecting in areas which may come into direct contact with the foodstuffs. Moreover, the rim being fixed to the sheet, normal cleaning is often ineffective in removing dirt collected in the corners between the rim and sheet. As for the containers, the half-shells, though removable, are fitted to the door to withstand fairly heavy loads, and as such are not easy to remove and are normally left in place.

[0007] It is an object of the present invention to provide a refrigerator designed to eliminate the above drawback.

[0008] According to the present invention, there is provided a refrigerator comprising a refrigeration compartment defined by a number of walls; and a supporting member for supporting foodstuffs and food containers, and selectively insertable inside the refrigeration compartment; the refrigerator being characterized by comprising a structure fixable to at least one of said walls and having a seat for housing said supporting member; the structure and the supporting member being connectable to each other to define a definite position of said supporting member inside said structure inside the refrigeration compartment.

[0009] In other words, the function of connecting the supporting member to one of the walls of the refrigeration compartment is performed by the structure, so that the supporting member can be so formed as to avoid hard-to-clean areas, and to be easily removable from the structure.

[0010] A preferred, non-limiting embodiment of the

present invention will be described by way of example with reference to the accompanying drawings, in which:

5 Figure 1 shows a front view of a refrigerator in accordance with the present invention, with the door open;

Figure 2 shows a larger-scale view in perspective of a shelf of the Figure 1 refrigerator;

10 Figure 3 shows a larger-scale view in perspective of a container of the Figure 1 refrigerator;

Figure 4 shows a view in perspective of the Figure 2 shelf equipped with a further fixture.

[0011] Number 1 in Figure 1 indicates as a whole a 15 refrigerator comprising a main body 2 and a door 3, which define a refrigeration compartment 4. A freezer compartment 5 is located beneath compartment 4, and is defined by main body 2 and by a further door 6. Refrigerator 1 is of the type in which the door is hinged about a vertical axis not shown. More specifically, compartment 4 is defined by a bottom wall 7, a rear wall 8, a top wall 9, two lateral walls 10, and a wall 11 defined by door 3.

[0012] Compartment 4 houses a drawer 12 resting on 25 bottom wall 6; four shelves 13 hooked onto rear wall 8; and four containers 14 hanging on wall 11, i.e. door 3. Rear wall 8 has two parallel sets of openings 15 engaged by shelves 13.

[0013] With reference to Figure 2, each shelf 13 comprises 30 a supporting member, defined by a flat sheet 16, for supporting foodstuffs and/or food containers; and a structure 17 having a seat 18 for housing sheet 16. Sheet 16 is rectangular with rounded edges, and structure 17 comprises two connecting brackets 19 and two 35 bent bars 20 and 21. Each bracket 19 is substantially C-shaped, and comprises a first free end having a stop member 22, and a second free end located over the first free end and having a hook 23. Stop members 22 and hooks 23 engage respective openings 15 to fix shelves 13 to wall 8. Each bracket 19 also comprises a slot 19a for the purpose explained later on.

[0014] Bar 20 is fixed at the ends to the top portions 45 of brackets 19, and is bent to comprise two opposite facing lateral portions 24, and a rear portion 25 connecting portions 24. Each lateral portion 24 is defined by portions 20a and 20b of bar 20 bent one on top of the other. Bar 21 is fixed at the ends to the bottom portions of brackets 19, and comprises two lateral portions 26 extending from brackets 19 towards the free ends of portions 24 and joined by a front portion 27.

[0015] Each portion 24 comprises a rear end 28a, a front end 28b, and a central portion 28c recessed with respect to ends 28a and 28b and forming a respective seat 18. Along central portion 28b, portions 20a and 20b 55 of bar 20 are spaced apart to house one end of sheet 16, and, at end 28a, portions 20a and 20b are spaced apart by a gap smaller than the thickness of sheet 16. In other words, ends 28a provide for guiding sheet 16

and defining a definite position of sheet 16 inside structure 17 in a direction D1, while central portion 28c defines a definite position of sheet 16 in a vertical direction D2 perpendicular to direction D1. Portion 25 has bends 29 for arresting sheet 16 in a given position in a direction D3. And sheet 16 can be withdrawn freely from the structure in direction D3, in the opposite sense to the arrow in Figure 2.

[0016] With reference to Figure 3, each container 14 comprises a tub 30; and a basket-like structure 31 which is fixed to door 3 by means of a bracket 32. Structure 31 comprises a bar 33 looped into a rectangle; and two U-shaped bars 34 connected to the underside of bar 33. Tub 30 comprises a bottom wall 35, two parallel facing lateral walls 36, and two parallel facing lateral walls 37; and each lateral wall 36, 37 has a top edge 38 bent to cover bar 33. In other words, structure 31 defines a seat 39 for housing tub 30, and edges 38 in turn define a seat 40 for housing bar 33.

[0017] Bars 33 and 34 are sized to be adjacent to each lateral wall 36, 37, and so define a definite position of tub 30 inside structure 31.

[0018] With reference to Figure 4, a bottle rack 41 is hooked onto structure 17, directly beneath sheet 16. Bottle rack 41 has a reticular structure, and comprises four hooks 42 and 43 by which to hook bottle rack 41 selectively onto any one of shelves 13. Bottle rack 41 is made of bent wire, and comprises two L-shaped lateral members 44, each having a hook 42 at one end; three undulated members 45 defining bottle seats; and a member 46 having a hook 43 at each end.

[0019] In actual use, bottle rack 41 can be selectively inserted inside refrigeration compartment 4 and hooked onto any one of shelves 13 by inserting member 46 on top of portions 26 and beneath portions 24 of structure 17, pushing member 46 inside slots 19a, lifting the front of bottle rack 41 so that hooks 42 contact the underside of sheet 16, and resting hooks 42 on top of front portion 27. In the course of the last step, member 46 is withdrawn from slots 19a, and hooks 43 rest on portions 26.

5 2. A refrigerator as claimed in Claim 1, **characterized in that** said supporting member is defined by a sheet (16) which slides inside said seat (18); said structure (17) having locators (29) against which said sheet (16) rests, and which form a shelf (13) with said sheet (16).

10 3. A refrigerator as claimed in Claim 2, **characterized in that** said structure (17) comprises connecting means (19) for connection to one of said walls (7, 8, 9, 10, 11).

15 4. A refrigerator as claimed in Claim 3, **characterized in that** said structure (17) comprises bars (20, 21) bent and fixed to said connecting means (19).

20 5. A refrigerator as claimed in any one of Claims 1 to 4, **characterized by** comprising a bottle rack (41) selectively connectable to said structure (17).

25 6. A refrigerator as claimed in Claim 5, **characterized in that** said bottle rack comprises hooks (42, 43) cooperating with said structure (17).

30 7. A refrigerator as claimed in Claim 1, **characterized in that** said supporting member is defined by a tub (30).

35 8. A refrigerator as claimed in Claim 7, **characterized in that** said structure is a basket (31).

9. A refrigerator as claimed in any one of the foregoing Claims, **characterized in that** said structure (17; 31) is made of metal bars (20, 21; 33, 34).

35 10. A refrigerator as claimed in Claim 9, **characterized in that** said bars (20, 21; 33, 34) are made of steel.

40

45

50

55

Claims

1. A refrigerator comprising a refrigeration compartment (4) defined by a number of walls (7, 8, 9, 10, 11); and a supporting member (16; 30) for supporting foodstuffs and food containers, and selectively insertable inside the refrigeration compartment (4); the refrigerator being **characterized by** comprising a structure (17; 31) fixable to at least one of said walls (7, 8, 9, 10, 11) and having a seat (18; 39) for housing said supporting member (16; 30); the structure (17; 31) and the supporting member (16; 30) being connectable to each other to define a definite position of said supporting member (16; 30) inside said structure (17; 31) inside the refrigeration compartment (4).

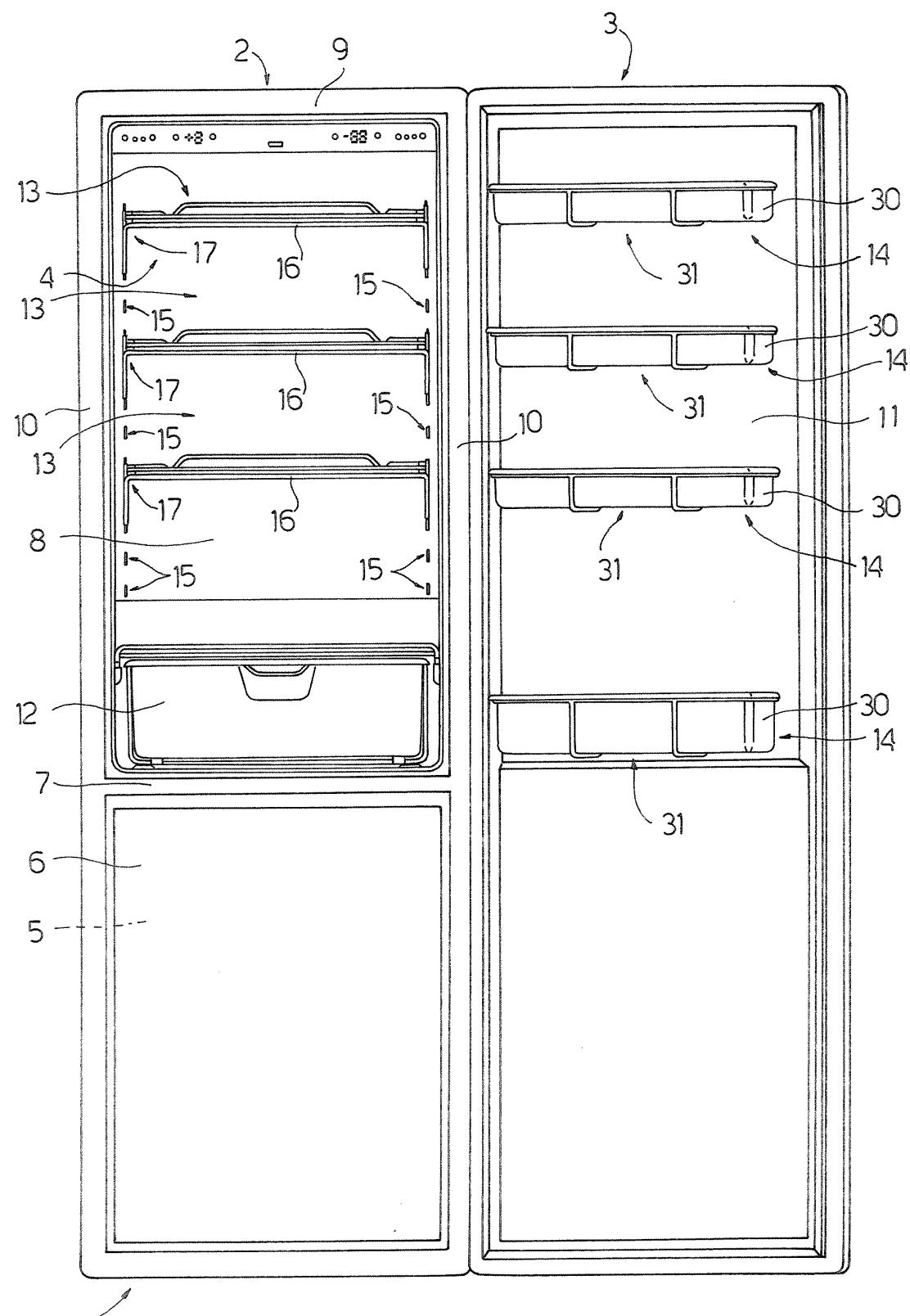
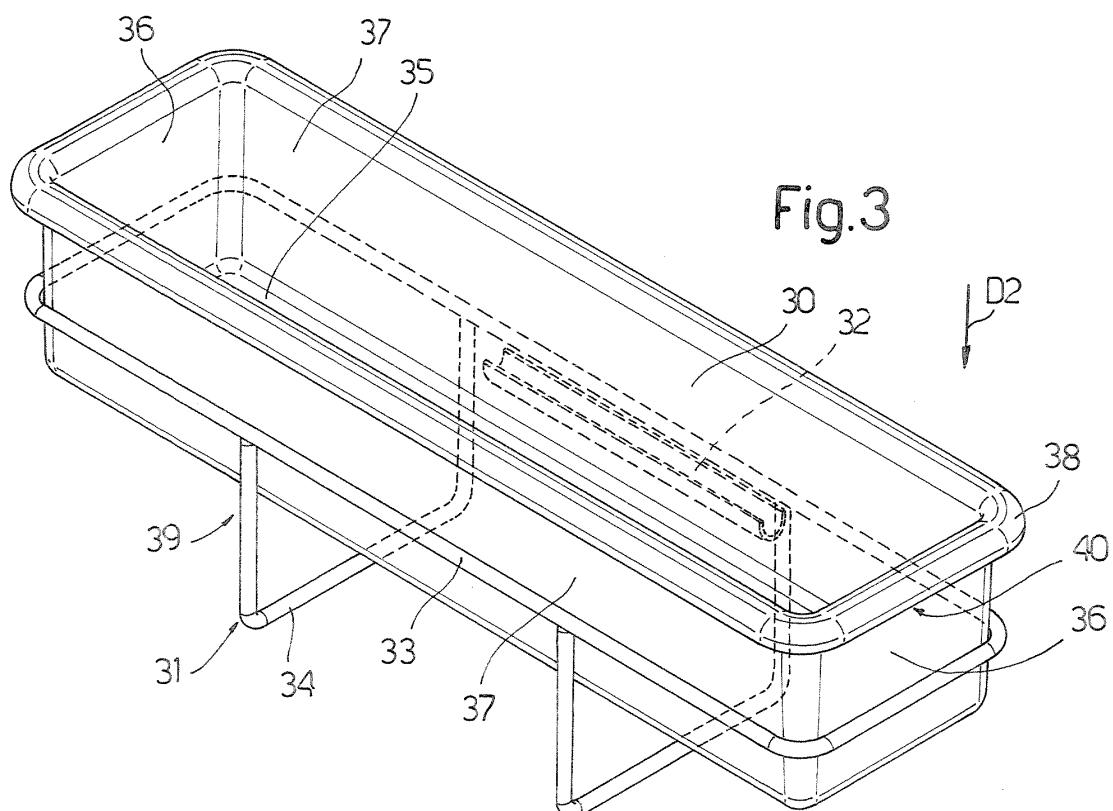
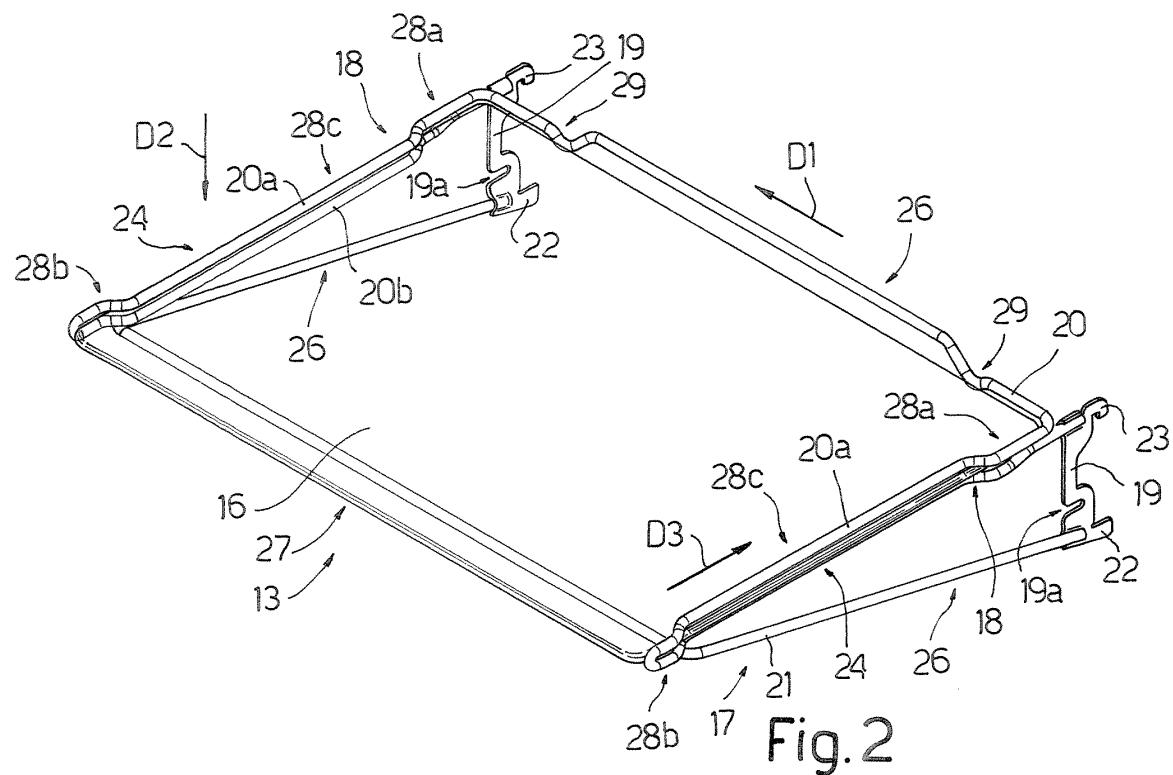


Fig.1



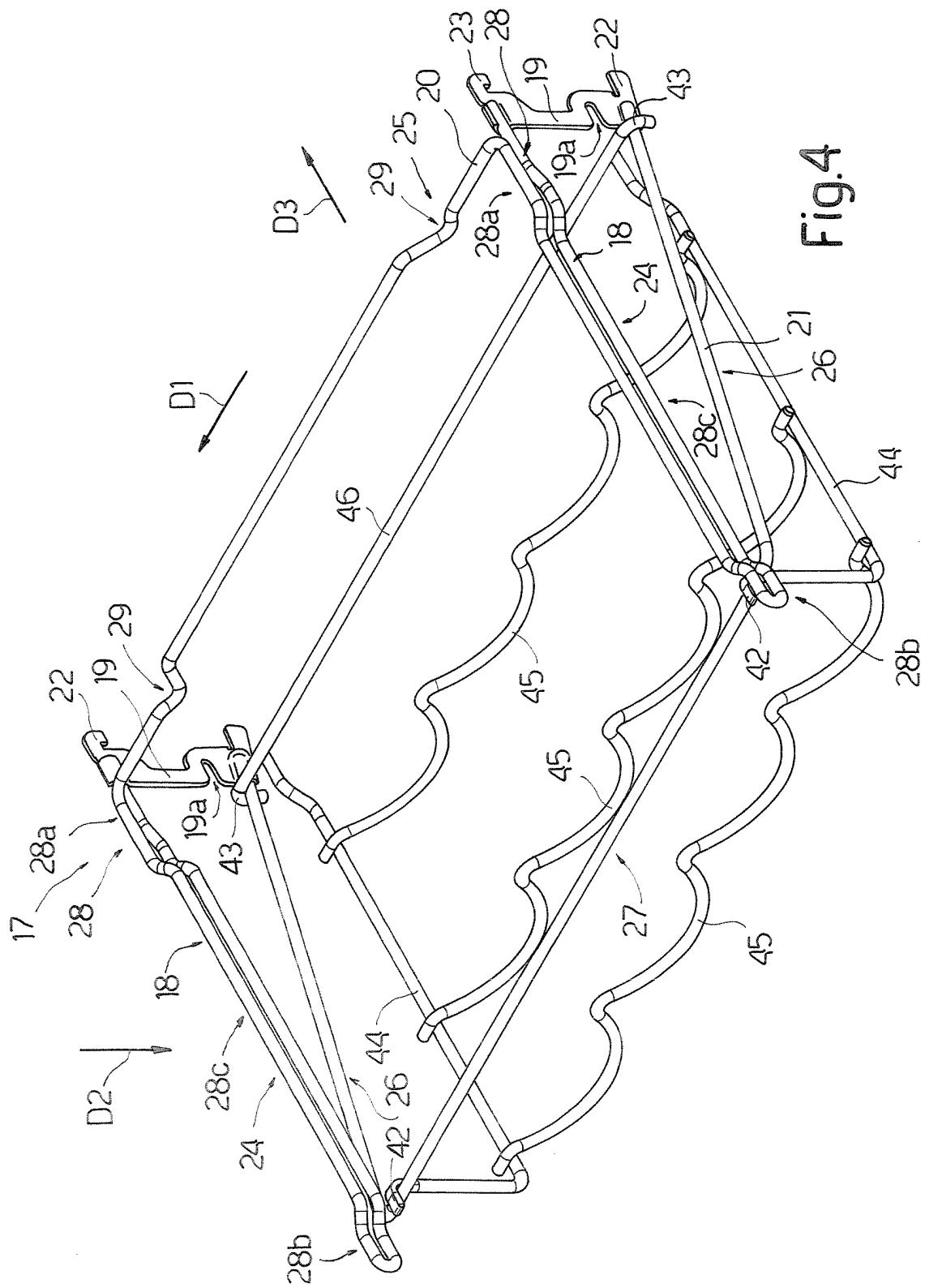


Fig. 4



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 10 4561

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 5 441 338 A (HERRMANN ROBERT SCOTT ET AL) 15 August 1995 (1995-08-15) * column 11, line 54 - column 12, line 17; figure 39 *	1-4,9,10	F25D25/02 F25D23/04
Y	US 3 805 964 A (TITUS A) 23 April 1974 (1974-04-23) * column 2, line 53 - column 4, line 9; figures 1,3 *	5,6	
Y	US 2 065 391 A (NANCE JAMES J) 22 December 1936 (1936-12-22) * page 1, column 2, line 38 - page 2, column 1, line 54 * * page 2, column 2, line 7 - line 9; figures 1-3,7 *	5,6	
X	US 3 984 163 A (BOORMAN JR EARL D ET AL) 5 October 1976 (1976-10-05) * column 3, line 59 - column 4, line 57; figures 1-3 *	1-3	
X	DE 199 49 238 A (AEG HAUSGERAETE GMBH) 19 April 2001 (2001-04-19) * column 2, line 45 - line 67; figures 1,2 *	1,7	F25D
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Place of search		Date of completion of the search	Examiner
MUNICH		12 March 2004	Jessen, F
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			

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

EP 03 10 4561

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.

12-03-2004

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5441338	A	15-08-1995	US	5362145 A	08-11-1994
			US	5273354 A	28-12-1993
			CA	2094839 A1	28-01-1994
			DE	69313555 D1	09-10-1997
			DE	69313555 T2	02-04-1998
			EP	0581419 A1	02-02-1994
			ES	2109438 T3	16-01-1998
			MX	9303121 A1	28-02-1994
			CA	2061341 A1	08-09-1992
			DE	69216269 D1	13-02-1997
			DE	69216269 T2	12-06-1997
			EP	0507455 A2	07-10-1992
			ES	2095398 T3	16-02-1997
			US	5403084 A	04-04-1995
			US	5564809 A	15-10-1996
			US	5429433 A	04-07-1995
			US	5540493 A	30-07-1996
			US	5454638 A	03-10-1995
			US	5705113 A	06-01-1998
			US	5738880 A	14-04-1998
			CA	2071805 A1	26-12-1992
			DE	69216920 D1	06-03-1997
			DE	69216920 T2	28-08-1997
			EP	0520786 A2	30-12-1992
			ES	2096723 T3	16-03-1997
			US	5524981 A	11-06-1996
			CA	2094836 A1	14-01-1994
			DE	69315494 D1	15-01-1998
			DE	69315494 T2	16-04-1998
			EP	0579364 A1	19-01-1994
			ES	2109437 T3	16-01-1998
			MX	9303122 A1	28-02-1994

US 3805964	A	23-04-1974	CA	978158 A1	18-11-1975

US 2065391	A	22-12-1936	NONE		

US 3984163	A	05-10-1976	NONE		

DE 19949238	A	19-04-2001	DE	19949238 A1	19-04-2001

EPO FORM F0459

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