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

(11) EP 1 481 612 A1

# (12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
**01.12.2004 Bulletin 2004/49**

(51) Int Cl.[7]: **A47B 95/04**, A47B 96/20, F25D 23/08, F25D 23/02

(21) Application number: **04102125.4**

(22) Date of filing: **14.05.2004**

(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 PL PT RO SE SI SK TR**
Designated Extension States:
**AL HR LT LV MK**

(30) Priority: **28.05.2003 FI 20030213 U**

(71) Applicant: **Helkama Forste Oy**
**30300 Forssa (FI)**

(72) Inventor: **Parkkinen, Erkki**
**04600, Mäntsälä (FI)**

(74) Representative: **Kaukonen, Juha Veikko**
**Kolster Oy Ab,**
**Iso Roobertinkatu 23,**
**P.O. Box 148**
**00121 Helsinki (FI)**

## (54) Surface structure for household appliances and refrigeration equipment

(57) A surface structure for providing a visible surface for household appliances and refrigeration equipment. The surface structure comprises a thin sheet (6) to be placed upon a household appliance or refrigeration equipment, the sheet forming a visible surface and two opposite edges of the sheet (6) being bent at both edges at two bending points (7, 8) at a distance from each other substantially in parallel with each other relative to the sheet (6), and at the same edge in the same bending direction in such a way that both edges of the sheet (6) are provided with a groove-like space (9) on the same side of the sheet. The edges of the door or wall of the household appliance or refrigeration equipment fit into the groove (9) when the sheet (6) is mounted in place upon the door or wall of the household appliance or refrigeration equipment, whereby the edges of the sheet (6) become positioned in the space behind the edge of the door or wall of the household appliance or refrigeration equipment and fix the sheet (6) in place.

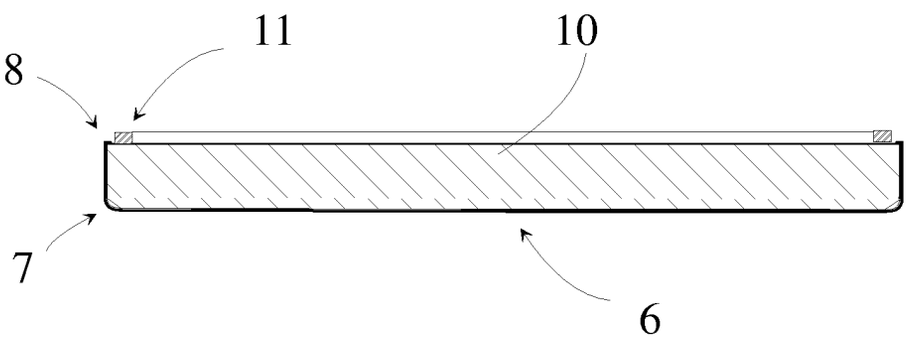



FIG. 3

EP 1 481 612 A1

## Description

### BACKGROUND OF THE INVENTION

**[0001]** The present invention relates to a surface structure for household appliances and refrigeration equipment.

**[0002]** The colour of household appliances, i.e. washing machines, dishwashers and tumble driers, and of refrigeration equipment, i.e. refrigerators, freezers and upright freezers, as well as of different cold stores used in product selling is today typically white, and specifically the large surfaces of the equipment are typically of one colour. The colours of handles, different gratings and the like may vary to some extent, although even these are typically white nowadays.

**[0003]** Kitchen fittings or different product fittings, such as cold stores or the like, are typically of one colour, usually white. At some stage, also such kitchen fittings have been sold whose surfaces were painted with different paints to provide colourful equipment. Also such solutions have been known where the front surface of a dishwasher or refrigerator, for example, has been a sheet of a given colour which has then been fitted by its edges with different angle sections and screws.

**[0004]** In known solutions, the problem has been that the sales of fittings painted with given colours from the beginning have not necessarily been expected due to the selection of colours or another aspect. Further, it has not been possible to change colours when for example kitchen furnishings or the like fittings have changed. Likewise, the outer surfaces of product fittings have been designed and painted or otherwise coated with tapes, for instance, particularly for a given product to be sold, and when the product or the advertising campaign changes, such refrigeration equipment must usually be replaced with a new one. It has also been difficult to repair damages on the fitting surfaces.

### BRIEF DESCRIPTION OF THE INVENTION

**[0005]** An object of the present invention is to provide such a surface structure for kitchen fittings or the like with which it is easy to change the appearance of the fittings and which is reasonably inexpensive.

**[0006]** The surface structure according to the invention is characterized in that it comprises a thin sheet to be mounted upon a door or wall of a household appliance or refrigeration equipment, the sheet forming a visible surface; and that two opposite edges of the sheet are bent at both edges at two bending points at a distance from each other substantially in parallel with each other relative to the sheet, and at the same edge in the same bending direction in such a way that both edges of the sheet are provided with a groove-like space, into which the edges of the door or wall of the household appliance or refrigeration equipment fit when the sheet is mounted in place upon the door or wall of the household appliance or refrigeration equipment, whereby the edges of the sheet become positioned in the space behind the edge of the door or wall of the household appliance or refrigeration equipment and fix the sheet in place.

**[0007]** An essential idea of the invention is that loose surface structures are manufactured for a household appliance or refrigeration equipment, which structures can be easily mounted and detached, thus changing the appearance or colour of the household appliance or refrigeration equipment. This has been achieved in such a way that a surface that becomes tightly positioned upon the door or wall of the household appliance or refrigeration equipment is formed of a thin sheet by bending opposite edges of the sheet, the surface, when being mounted or detached, yielding in such a way that it can be "clicked" in place such that the remotest narrow edge parts of the sheet edge become positioned in the space behind the part to be coated, such as the door or wall, of the household appliance or refrigeration equipment, locking the sheet firmly in place.

**[0008]** An essential idea of a preferred embodiment of the invention is that the bends are made such that the angles formed in the bending are sharper on the side of the door or wall to be coated than the angle of the door or the wall, whereby this presses both sheet edges tightly against the door or wall, keeping the sheet firmly in place.

**[0009]** An advantage of the invention is that when the appearance of the household appliance or refrigeration equipment is to be changed, the sheet forming its surface structure can be removed and a new one supplied to replace it. Likewise, if there has earlier been no loose sheet that would form a surface structure, such a sheet can be mounted.

### BRIEF DESCRIPTION OF THE FIGURES

**[0010]** The invention will be explained in greater detail with reference to the attached drawings, of which

Figure 1 shows schematically a household appliance and/or refrigeration equipment;
Figures 2a to 2c show schematically a sheet forming a surface structure and bent in accordance with the invention, as well as details thereof; and
Figure 3 shows schematically a sheet mounted in place.

**[0011]** For the sake of clarity, the invention is shown simplified in the figures and similar parts have been denoted with the same reference numerals.

### DETAILED DESCRIPTION OF THE INVENTION

**[0012]** Figure 1 shows schematically a perspective view of a cold store that represents, by way of example, a household appliance and/or refrigeration equipment

in which the surface structure according to the invention can be implemented. In the case of Figure 1, the surfaces of doors 2 and 3 and side walls 4 and 5 of a cold store 1 can be covered with a surface structure according to the invention by clicking onto them a thin sheet, the edges of which become positioned around the edges of the doors 2 and 3 and the walls 4 and 5.

**[0013]** Figure 2a shows schematically a perspective view of a sheet intended for forming a surface structure according to the invention. A sheet 6 is bent at two opposite edges thereof at two bending points 7 and 8 in parallel. At the edge of the sheet, the bending is carried out in the same direction at both bending points in such a way that the edge of the sheet 6 is provided with a groove 9 towards the opposite edge of the sheet. At the opposite edge of the sheet, the bending is naturally carried out in the opposite direction in such a way that both edges of the sheet are provided with grooves 9 on the same side of the sheet 6. Figure 2b shows an end view of a sheet according to Figure 2a. Figure 2c shows the edge of the sheet in more detail, and it can be seen how the sheet is bent at bending points 7 and 8 so as to form the groove 9. The internal bending radius of the bending points 7 and 8 is dimensioned in such a way that it is at the corresponding point substantially equal to the bending radius of the outer surface of the part upon which the sheet 6 is intended to be mounted. As indicated by Figure 2c, the sheet can be bent in such a way that the angle between the sheet surfaces relative to the bending points is less than 90°. In this way, the edges of the sheets are pressed tightly against the edges of the part to be coated, which keeps the sheet firmly in place. Naturally, the angles may also be different, depending on the corresponding angles in the household appliance or refrigeration equipment.

**[0014]** Figure 3 shows schematically a sheet mounted upon a door 10 of a cold store, where it forms a visible surface in its proper place. Between the door and the actual cold store, there is a sealing 11, due to which there remains a space behind the door edges. The narrow bends at the edges of the sheet 6 become positioned in this space behind the edges of the door 10, fixing the sheet 6 firmly against the door. Correspondingly, a space must be formed adjacent the wall edges of the household appliance or refrigeration equipment, into which space the edges of the sheet 6 fit if a sheet forming a visible surface is to be positioned upon the walls. To prevent the sheet from sliding downwards in the elevational direction, the end part of the door 10, for example, is provided with a small protrusion extending outside the actual surface sheet of the door, against which protrusion the lower edge of the sheet 6 becomes positioned and which protrusion functions as a locking member, locking the sheet in its place downwards.

**[0015]** A sheet may be manufactured of different transparent or non-transparent plastics or metals. Transparent plastic may be coloured translucently or it may be colourless. If desired, different patterns may be formed upon or on the inner surface of a sheet of transparent material, and different loose patterns may also be positioned between the sheet and the surface of the household appliance or refrigeration equipment. The sheet may be patterned with various impression techniques, such as serigraphy. Either the whole outer surface of the sheet or part of it may be painted or otherwise coated or treated. The sheet surface may also be mechanically treated, for instance by grinding or sand or the like blasting, or otherwise treated with machining or chemical treatment in such a way that the surface is provided with a symmetric or an asymmetric pattern, which is preferably at least somewhat three-dimensional. On such a surface, light and its reflection from different directions generate various effects on the appearance. The sheet itself may have locking members to lock it immovably in the direction of the bent sides. When being mounted, the sheet yields sufficiently owing to its thinness, so that it is possible to mount it in place by one edge and to press the other edge such that the sheet eventually clicks in place and becomes locked.

**[0016]** The drawings and the related description are only intended to illustrate the idea of the invention. The details of the invention may vary within the scope of the claims.

## Claims

1. A surface structure for forming a visible surface for household appliances and refrigeration equipment, **characterized in that** it comprises a thin sheet (6) to be mounted upon a door or wall of a household appliance or refrigeration equipment, the sheet (6) forming a visible surface; and that two opposite edges of the sheet (6) are bent at both edges at two bending points (7, 8) at a distance from each other substantially in parallel with each other relative to the sheet (6), and at the same edge in the same bending direction in such a way that both edges of the sheet (6) are provided with a groove-like space (9), into which the edges of the door or wall of the household appliance or refrigeration equipment fit when the sheet (6) is mounted in place upon the door or wall of the household appliance or refrigeration equipment, whereby the edges of the sheet (6) become positioned in the space behind the edge of the door or wall of the household appliance or refrigeration equipment and fix the sheet (6) in place.

2. A surface structure according to claim 1, **characterized in that** the angles formed by the bends on the side of the grooves are less than 90 degrees.

3. A surface structure according to claim 1 or 2, **characterized in that** the bending radius of the bends on the side of the grooves is equal to the corre-

sponding bending radius of the outer surface of the door or wall to be covered with the sheet (6).

**4.** A surface structure according to any one of the preceding claims, **characterized in that** when the bent edges of the sheet (6) are vertical when mounted in place, the household appliance or refrigeration equipment and/or the sheet (6) comprise/s locking members that prevent the sheet (6) from sliding downwards in the elevational direction.

**5.** A surface structure according to claim 4, **characterized in that** the locking members comprise a protrusion, such as an edge, intended to be positioned against the lower edge of the sheet (6) in the household appliance or refrigeration equipment.

**6.** A surface structure according to any one of the preceding claims, **characterized in that** the sheet (6) is of plastic.

**7.** A surface structure according to claim 6, **characterized in that** the sheet (6) is transparent.

**8.** A surface structure according to claim 6 or 7, **characterized in that** the sheet (6) is translucently coloured.

**9.** A surface structure according to claims 6 to 8, **characterized in that** there is a pattern on the inner surface of the sheet (6).

**10.** A surface structure according to any one of claims 1 to 5, **characterized in that** the sheet (6) is of metal.

**11.** A surface structure according to any one of the preceding claims, **characterized in that** the visible surface of the sheet (6) is at least partly painted or coated.

**12.** A surface structure according to any one of the preceding claims, **characterized in that** the visible surface of the sheet (6) is at least partly treated in such a way that a symmetric or an asymmetric, preferably three-dimensional pattern is formed on it.

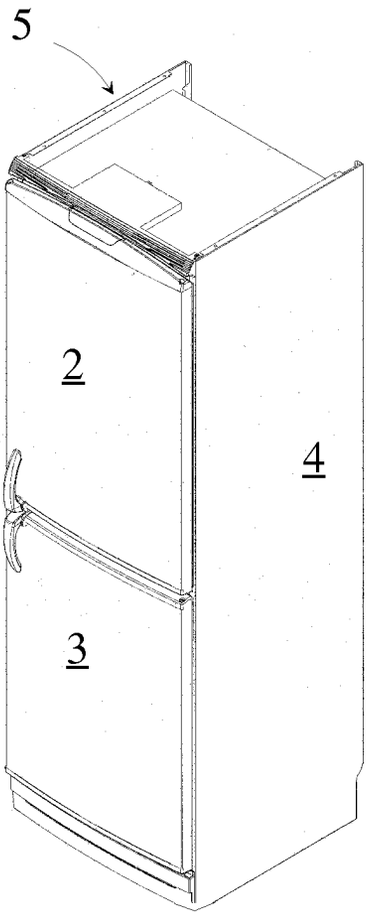



FIG. 1

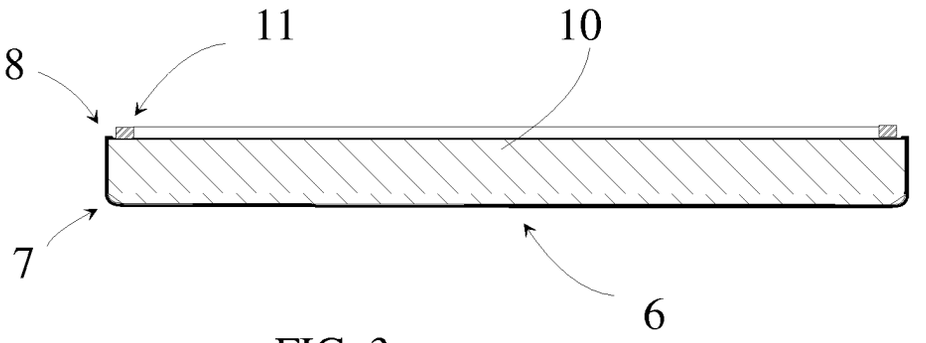
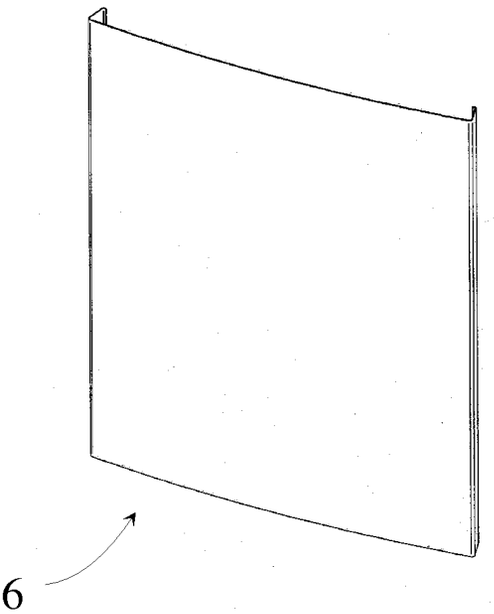



FIG. 3

FIG. 2a



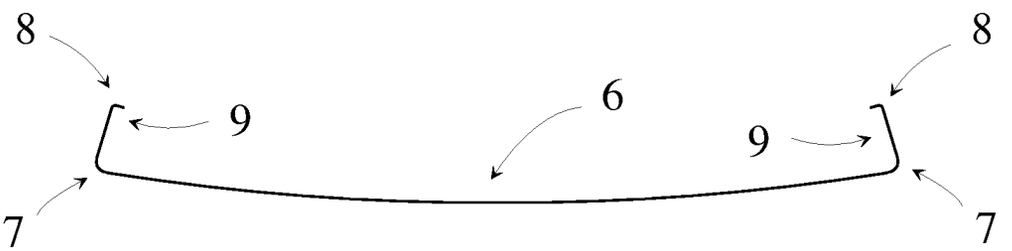




FIG. 2b

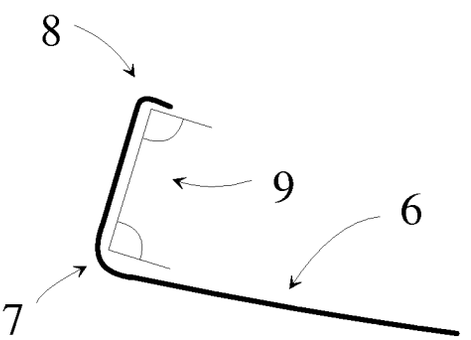



FIG.2c

European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 04 10 2125

## 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<br>A | FR 1 300 022 A (FERDINANDO ZOPPAS & FIGLI)<br>27 July 1962 (1962-07-27)<br>* the whole document * | 1,3,4,10<br>2,5-9,<br>11,12 | A47B95/04<br>A47B96/20<br>F25D23/08<br>F25D23/02 |
| X<br>A | US 3 408 127 A (RENE VINCENS)<br>29 October 1968 (1968-10-29)<br>* column 2, line 69 - column 4, line 55; figures 1-12 * | 1,3,4,<br>6-12<br>2,5 | |
| X<br>A | FR 2 674 112 A (GOULAIS FRANCOIS)<br>25 September 1992 (1992-09-25)<br>* page 1; figures 1-3 * | 1-4,<br>10-12<br>5-9 | |
| A | US 4 966 424 A (SCHNEIDER WALTER)<br>30 October 1990 (1990-10-30)<br>* column 2, line 28 - column 3, line 52; figures 1-8 * | 1-12 | |

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A47B
F25D

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| MUNICH | 1 September 2004 | Klintebäck, D |

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 03.82 (P04C01)

## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 10 2125

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.

01-09-2004

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| FR 1300022 A | 27-07-1962 | NONE | |
| US 3408127 A | 29-10-1968 | FR 88957 E | 21-04-1967 |
| | | FR 1454518 A | 11-02-1966 |
| | | BE 685432 A | 16-01-1967 |
| | | CH 445049 A | 15-10-1967 |
| | | FR 89796 E | 29-11-1967 |
| | | FR 92162 E | |
| | | GB 1115124 A | 29-05-1968 |
| FR 2674112 A | 25-09-1992 | FR 2674112 A1 | 25-09-1992 |
| US 4966424 A | 30-10-1990 | AT 69935 T | 15-12-1991 |
| | | CA 1321228 C | 10-08-1993 |
| | | DE 58900525 D1 | 16-01-1992 |
| | | EP 0342151 A1 | 15-11-1989 |

EPO FORM P0459

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