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

(11) Publication number: **0 153 059**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **85300688.0**

(22) Date of filing: **01.02.85**

(51) Int. Cl.⁴: **B 44 D 3/12**, B 05 C 21/00, B 65 B 3/04, B 65 D 25/00

(30) Priority: **14.02.84 GB 8403813**

(43) Date of publication of application: **28.08.85 Bulletin 85/35**

(84) Designated Contracting States: **DE FR GB SE**

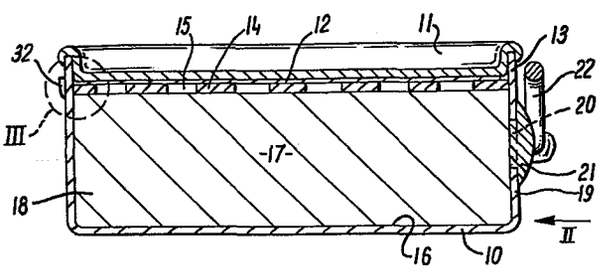
(71) Applicant: **REED INTERNATIONAL P.L.C., 83, Piccadilly, London, W1A 1EJ (GB)**

(72) Inventor: **Graham, Thomas, 8 Lancaster Drive, Clitheroe BB7 2PD (GB)**

(74) Representative: **Medlock, Edwin Roy, 10 Victoria Road Grappenhall, Warrington, WA4 2EN (GB)**

(54) Paint containers.

(57) A paint container comprises a tray (10) filled with a set medium (18) — such as a thioxotropic paint which responds to shear at its surface to create a liquid phase of shallow depth — and closed with a cover (11). The filling is performed with the cover in place through an aperture (20), in the side wall (19) of the tray, which is subsequently sealed with a plug (21). The filling is preferably made with the tray on edge until a slight bulge (Fig. 4) and a small voidage exist. The bulge and the voidage are then removed by applied external pressure to the tray thus giving a substantially 100% sealed filling so that the container can be moved without spillage and the contents allowed to set without the need for applied heat.



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PAINT CONTAINERS

This invention relates to paint containers.

Paint presented in a flat container at the point of sale has already been referred to (see GB 2 105 359A). Paint presented in this way introduces problems which can be met by formulating the paint so that it is nominally solid but responds to action, such as shear, at its surface to create a liquid phase of shallow depth which does not readily relax back to the solid state.

However, whilst the paint is nominally solid at the point of sale it is liquid at the point of dispensing it from manufacturing plant into flat containers. A problem arises with the handling of flat open containers filled, not necessarily full to the brim, with liquid paint. One solution to this problem can be seen in GB 2 105 359A where the containers at the point of filling are subjected to heating to accelerate firming-up of the paint so that the filled container becomes handleable. The need to provide heating involves increased capital and running costs.

The present invention arises out of consideration of these costs and offers a way of avoiding them.

In accordance with the present invention a method of

filling a flat container provided with a removable cover, with paint, ink, adhesives, etc. which can be made to firm up after filling, involves applying the cover and thereafter filling the container through a small wall, base, or cover aperture, which is closed by a closure member after filling, and removing the filled container from the point of filling whilst the contents are in the liquid phase and allowing them to firm-up (set, gel, structure, become thixotropic or pseudoplastic) by standing.

Where the filled container is also provided with a removable plastic or metal foil sealed to the perimeter of the container (as referred to in European Patent Application No. 84308525.9) it would be possible to fill the container, and transport it, and store it whilst in an 'on-edge' position.

For a flat container fitted with a membrane having openings through which paint can pass and which can follow the fall of the surface of the paint as it is consumed, (as referred to in European Patent Application No. 84308525.9) a small filling aperture is provided in one of the side walls of the container and means are provided to hold the membrane in position so that there is no risk of it falling across or beyond the aperture. This may

be achieved by small pressure contact on the membrane which releases when pressure is applied to the membrane in use. Alternatively, the membrane may have small magnetic regions so that it can be held in its correct position magnetically whilst the container is being filled. Alternatively, the membrane may have lugs locating in recesses in the rim of the tray.

The closure for the small filling aperture, when in the wall of the container, is preferably dimensioned so as to be flush with the inside surface of the wall when fitted. The closure is preferably not readily removable once in place on a filled container.

Bulging of the container during filling is a possibility as it will customarily be made of thin plastics material. Bulging can be restrained by a suitable support such as a clamp with flat jaws. The support could allow a small predetermined bulge during filling which is then corrected immediately before the closure closes off the container so that a completely filled container is obtained which is flat when the contents are firmed-up and hence stably stackable and is free of voidage and skin-forming atmosphere. The container could then also be storable in the on-edge position and could be fitted with a handle so that it could be easily carried in this position.

A zero or near-zero voidage filling of a container having a fitted membrane with openings and a sealing foil allows the contents of the container, before they have become firm, to ease into the openings in the membrane and into contact with the foil without escape so that when the foil is removed prior to use of the paint an unskinned paint surface exists on the membrane ready for immediate use. After the paint has been used, and before it is fully consumed, the container can be set up for storage by running a scraper over the surface of the membrane to remove surplus paint and the foil can be applied again to the surface of the membrane to prepare an unskinned paint surface when next required for use.

The small filling aperture could also be provided in the lid or base of the container.

One form of the invention will now be described with reference to the accompanying drawing in which:

Fig. 1 shows a sectional elevation of a container filled by a method according to the invention; Fig. 2 is an end elevation in the direction of arrow II on Fig. 1; Fig. 3 is a scrap sectional plan view in the region of circle III of Fig. 1; and Fig. 4 is a diagram showing a filling operation.

In Fig. 1 a rectangular tray 10 has a snap-on cover 11. The tray is shown in position immediately prior to opening in order to use the paint in the tray. Immediately below the cover there is a thin plastic foil 12 sealed to the perimeter 13 of the tray. In contact with the foil 12 there is a membrane 14 having openings 15. The space 17 between the membrane 14 and the base 16 of the tray 10 is filled with paint 18.

In one wall 19 of the tray 10 there is an aperture 20 which is small in area compared with the area exposed when the cover 11 is removed. The aperture is closed with a closure member 21, the inner surface of which is flush with the inside of the wall 19.

Fig. 2 shows the end view of the filled tray and a carrying handle 22. The membrane 14 is free to follow the fall of the paint in the tray as it is consumed by a brush, roller, or pad moving over the surface of the membrane. There is an initial restraint on the freedom of the membrane by virtue of small projections 30 (see Fig. 3) on the edges of the membrane engaging in corresponding small recesses 31 in thickened regions 32 of the walls of the tray. This restraint is adequate to prevent the membrane leaving the position shown in Fig. 1 during manipulation prior to the filling operation but is over-

come when a brush, roller, or pad presses on the membrane in use.

To fill the tray it is offered on edge to a dispensing machine (the valved discharge pipe 40 thereof being shown in Fig. 4) with the cover 11, foil 12 and membrane 14 in the positions shown in Fig. 1. The closure member 21 is not present and the tray is disposed so that the aperture 20 is uppermost. The tray is held between a pair of jaws 41 acting between the base of the tray and the cover 11 to allow the tray to take up a slight bulge (shown exaggerated in Fig. 4). Filling takes place through the aperture 20 by dispensing a predetermined volume which, it is known, will fill the tray except for a small voidage. The closure member 21 is then offered to the aperture 20 and the jaws closed slightly, such as with a cam 41, so that the tray becomes truly flat. At the same time the closure member is applied to the aperture 20 and sealed.

The fully filled and fully closed tray can now be removed and taken to a storage place and stored on base or sides until the paint inside firms-up by standing. It is then ready for sale and use.

For use the cover 11 is removed, the plastic foil is removed (and set aside for replacement back on the membrane 14 if the paint in the tray is not fully used) to expose

the membrane 14 and render the paint ready for application by brush, roller, or pad which takes up the paint by being moved over the surface of the membrane with a modest pressure.

The aperture 20 and closure member 21 could be provided at one corner of the membrane 14.

The method of the invention can be used for paints in trays which do not rely on a membrane to control their take up.

CLAIMS

1. A method of filling a flat container provided with a removable cover, with paint, ink, adhesives, etc. which can be made to firm up after filling, involves applying the cover and thereafter filling the container through a small wall, base, or cover aperture, which is closed by a closure member after filling, and removing the filled container from the point of filling whilst the contents are in the liquid phase and allowing them to firm-up (set, gel, structure, become thixotropic or pseudoplastic) by standing.

2. A method as claimed in Claim 1 in which the container is also provided with a foil sealed to the perimeter of the container and at least a part of the filling and standing is performed with the container on-edge.

3. A method as claimed in Claim 1 or 2 in which the container is also provided with a membrane, having openings, which can follow the fall of the surface of the paint etc. as it is consumed, and the membrane it held in a position during filling so that paint only enters between the membrane and the base of the container.

4. A method as claimed in any preceding claim in which the container itself cannot resist bulging during

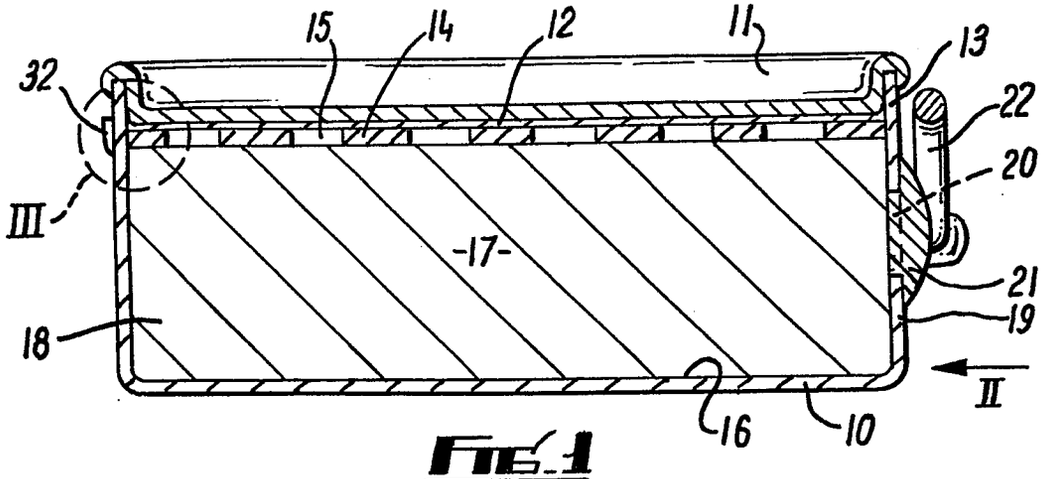
filling but the container during said filling is restrained, at least in part by an externally applied force.

5. A method as claimed in Claim 4 in which the restraint allows a degree of bulging which is then corrected immediately before closing off the container so that a completely or almost completely filled container is obtained which is flat when the filling is firmed-up.

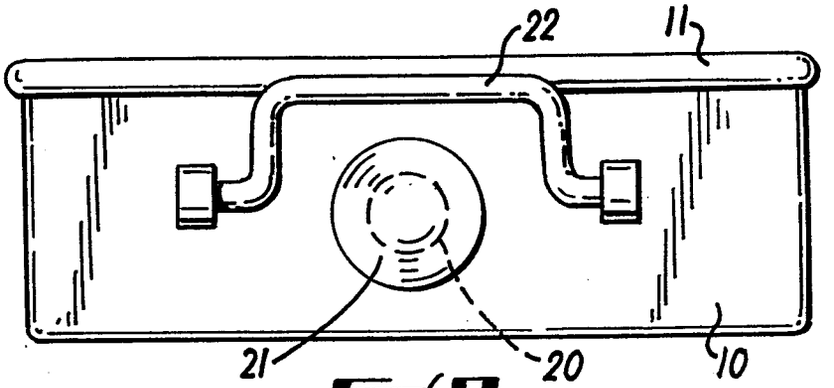
6. A flat container filled by the method of any preceding claim.

7. A flat container as claimed in Claim 6 when related to Claim 3 in which the filling, before coming firm, has eased into the openings of the membrane and into contact with the foil so that removal of the foil presents an unskinned paint surface on the membrane ready for immediate use.

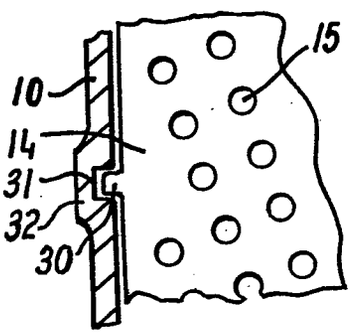
8. A flat tray-like container filled with a set medium which responds to action, such as shear, at its surface to create a liquid phase of shallow depth and having a removable cover characterised in that the container has a filling aperture (20) sealed with a plug (21) and the filling of the container is substantially 100%.



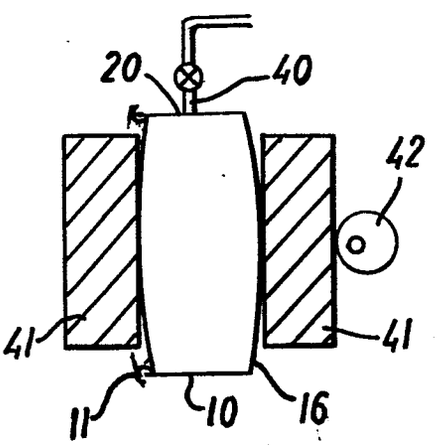
ФИГ.1



ФИГ.2



ФИГ.3



ФИГ.4

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EUROPEAN SEARCH REPORT

0153059
Application number

EP 85 30 0688

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	EP-A-0 037 888 (STUSSI) * The whole document *	1-8	B 44 D 3/12 B 05 C 21/00 B 65 B 3/04 B 65 D 25/00
A	FR-A-2 121 439 (JORDANA) * The whole document *	1,6,8	
A	GB-A- 956 316 (AERATOM AG) * The whole document *	1	
A	US-A-3 011 682 (KUS) * The whole document *	1-3,6-8	
A	FR-A-1 242 602 (HOBSON-GOOD) * Figures; abstract g,k; page 2, lines 46-52; page 3, column 2, lines 16-22 *	1,3-8	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	FR-A-2 092 437 (FUSTNER FRERES & CIE S.A.) * Figures; page 3 *	3,4	B 44 D B 05 C B 65 B B 65 D
A	FR-A-2 483 881 (SCHOLLE CORP.) * Figures 1,2,5-7; claims *	3-8	
A	GB-A-1 323 664 (P.SCOTT) * The whole document *	3,7,8	

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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	23-05-1985	DE LA MORINERIE B.M.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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EUROPEAN SEARCH REPORT

Application number

EP 85 30 0688

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	FR-A-2 383 832 (SOCAR) * The whole document *	4,8	
A	FR-A-2 102 047 (TETRA PAK INT.) * Figures; page 1 *	4-8	
A	US-A-3 577 698 (RUEKBERG) * Figures; claims *	4-8	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)

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