

⑫

EUROPEAN PATENT SPECIFICATION

④⑤ Date of publication of patent specification: **01.04.87**

⑤① Int. Cl.⁴: **B 65 D 25/32**

②① Application number: **84300105.8**

②② Date of filing: **09.01.84**

⑤④ **Injection moulded container.**

③⑩ Priority: **15.01.83 GB 8301110**

④③ Date of publication of application:
25.07.84 Bulletin 84/30

④⑤ Publication of the grant of the patent:
01.04.87 Bulletin 87/14

⑧④ Designated Contracting States:
BE CH DE FR IT LI NL SE

⑤⑧ References cited:
DE-A-2 026 198
DE-A-3 119 167
DE-B-1 024 870
FR-A-1 327 231
FR-A-2 228 001
FR-A-2 382 377
FR-A-2 463 063
FR-A-2 494 179
FR-E- 87 825

⑦③ Proprietor: **MARDON ILLINGWORTH LIMITED**
Forest Works Coxmoor Road
Sutton-in-Ashfield Nottinghamshire NG17 5LH
(GB)

⑦② Inventor: **Dudzik, Henryk**
4 Small Holdings Old Mill Lane
Forest Town Mansfield Nottinghamshire (GB)

⑦④ Representative: **MacGregor, Gordon et al**
ERIC POTTER & CLARKSON 14 Oxford Street
Nottingham, NG1 5BP (GB)

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European patent convention).

Description

This invention relates to injection moulded containers.

Paint and similar materials are usually sold in metal containers of the type having a body, a cylindrical side wall and a mouth at the top defined by a radially inwardly projecting rim. This rim defines a drip channel and tightly receives a plug-fitting lid. A carrying handle is mounted in yoke fashion on the side wall with opposite end parts of the handle pivotally mounted on external projections on the side wall. The external surface of the side wall is directly printed.

Printing is carried out on a blank of sheet metal prior to forming of the side wall of the container from the sheet. A pair of projections is rivetted to the side wall after printing and each projection extends to the exterior of the side wall with a formation for receiving a respective end part of the handle.

It has become desirable for containers of this type to be manufactured by injection moulding without losing the character of the metal container. Such a container has to be printed on a cylindrical side wall and it is important that the exterior surface of the side wall is smooth to facilitate printing.

FR—A—2463063 discloses a plastics moulded paint container which has its cylindrical side wall provided with integrally moulded external projections for mounting of a handle. This container differs from the usual paint container in having a lid which fits over the outside of the cylindrical side wall and the side wall also has external formations for snap-fitting of the lid.

The external projections and formations would interfere with the printing process and make it impossible or at least very difficult to print the cylindrical wall up to the top of the container. An unprinted band at the top of the container detracts substantially from its appearance.

This problem has been avoided by welding projections onto the surface after printing and attaching the handle to these projections.

This has the disadvantages that two welding steps have to be carried out on each container and the resultant weld is liable to break, so that, after filling of the container, there are numerous rejects.

It is known from FR—A—1327231 in respect of metal cans, to fit an elastomeric grommet into a hole in a can wall. The grommet has a projection into the interior of the can defining a socket for receiving a handle. The application of this principle to plastics cans would enable the cylindrical side wall to be printed prior to insertion of the grommet.

Several other problems would, however, be introduced. The grommet has to have a substantial portion at the exterior of the container to effect sealing and this substantially detracts from the appearance of the printed container, the container has to be moulded with a special formation to accept the grommet, separate pro-

cesses are needed to position the grommets and it is difficult to provide an effective seal, especially with a plastics container wall.

The present invention is concerned with eliminating the additional steps required to provide the handle mounting after printing and providing a reliable connection of the handle to the container body without making the printing process more difficult to carry out.

The present invention is characterised in that, prior to fitting of the handle, the circumferential external surface of the side wall is smooth without any projections, said projections extend radially inwardly from the inner surface of the side wall, each projection having a recess open to the exterior of the body, each end part of the handle having a spigot which pivotally seats in the corresponding one of the recesses, and retaining means retaining each spigot in the recess.

French Certificat d'Utilité No. 7411108 discloses a barrel-shaped plastics moulding, whose body is made in two halves sealed together along their edges. A separate top is secured to the body and has a narrow neck for receiving a stopper. The neck has inwardly extending projections which receive trunnions of a handle. This is a complicated construction, which could not be made in one piece by injection moulding and has no relation to the type of container with which the invention is concerned. It would not be obvious to a skilled person faced with the problem solved by the present invention, to injection mould the container with inward projections in the body side wall, if this French publication was available to him. The problem is not relevant to this publication and adaption of a container of the type for holding paint to the construction shown in this publication would render the container useless for its intended purpose, as well as making it impossible to produce by injection moulding.

In the preferred construction, pivotal movement is facilitated by the provision of spaced annular ribs on a spigot of the handle, which ribs define bearings journaled in the recess. This ensures that the handle cannot bind and be held in a raised position, which would interfere with automatic handling of the containers, e.g. during filling. One of these ribs co-operates with a shoulder at the entrance to the recess to retain the handle in the recess. The arrangement is such that the spigots can automatically be pushed into the recesses to provide the pivotal interconnections, the shoulder and/or the ribs being resilient to provide for snap-engagement.

The spigot is pivotally movable relative to the body of the container and this could cause a problem in mechanical handling for filling of the container. There is some vibration during conveyance and the handles could move into positions where they interfere with the process. This is prevented by providing the end of each spigot and the adjacent end wall of the respective recess with resiliently interengageable parts, which define location means for resiliently holding the handle in a given position. The handle may be

held positively in a precise position, or resiliently prevented from passing a precise position until a small force is applied to the handle.

Reference is now made to the accompanying drawings, wherein:—

Figure 1 is a side elevation of a body of a container according to the invention, shown partly in cross-section;

Figure 2 is an underneath plan view of the container body;

Figure 3 is an enlarged detail view in cross-section, showing how a handle is attached to the body of the container; and

Figure 4 is an enlarged perspective view, partly in section, of a detail of the container showing a connection of the handle to the body.

The container shown in Figure 1 is a one-piece injection moulding and has a bottom 11, a main cylindrical wall 12 and an open mouth 13 surrounded by an inwardly extending peripheral rim 14, formed as a drip channel.

As shown in Figure 2 the bottom 11 is reinforced by a pattern of integral radial and circular ribs 15, 16.

The cylindrical wall 12 is provided internally with integral vanes 17 adjacent the rim 14, the vanes being spaced around the wall.

Below the vanes, two diametrically opposite bosses 20 are provided projecting inwardly of the body. As shown in Figures 3 and 4, each boss 20 is hollow, defining a recess 21 open to the exterior of the body, but closed to the interior of the body by an end wall 22. At the inner end of the recess, a shallow depression 23 is provided in the end wall 22. The mouth of the recess is constricted by an annular rim 24 whose surface is radiused in cross-section.

The container includes a carrying handle 30, only part of which is illustrated in Figures 3 and 4. The handle is also moulded and is of the yoke type, conventional in paint cans, in which the handle is generally of inverted U-shape and bridges the mouth of the can in the carrying position, the free end of each leg of the U being pivotally mounted on the cylindrical wall of the can.

In Figure 3, the end part of one leg 31 of the handle 30 is shown, and this carries a spigot 32 extending axially perpendicularly to the length of the leg 31. The other leg of the handle (not shown) is similarly formed, with the two spigots lying on a common axis and extending towards each other. Each spigot engages in a corresponding one of the recesses 21.

Each spigot 32 is provided with a pair (or more) of axially spaced peripheral ribs 33, 34, each of which is radiused in cross-section. These ribs engage and slide on the internal peripheral wall of the respective recess 21 to facilitate pivotal movement of the spigots in the recesses.

Each annular rim 24 similarly slidably engages with the external surface of the respective spigot and serves to retain the spigot in the recess by co-operation with one of the peripheral ribs 33. The material of the main wall and/or the handle is

sufficiently resilient to allow for snap-engagement of each spigot in its recess.

On the free end wall of each spigot is a detent 35, which is engageable with the depression 23 in the end wall 22 of the recess. This locates the handle relative to the body in a given position and resiliently resists movement from that position. This prevents the handle from being moved by vibration during conveyance of the containers for filling and fitting of lids.

The vanes 17 prevent swirling of liquid in the container, during handling, and thereby prevent spillage.

Before fitting of the handle, the cylindrical wall of the container has a smooth exterior, with no projections, which can easily be printed.

The handle 30 may comprise a resiliently flexible length of material having the spigots 32 formed on each end, the flexibility allowing for bending of the spigot ends relative to the adjacent parts of the handle, instead of the spigots being formed perpendicularly to the adjacent parts of the handle.

Claims

1. A container comprising a one-piece injection moulded plastics body having a bottom (11) a cylindrical side wall (12) a mouth (13) at the top defined by a radially inwardly projecting rim (14) for receiving a plug-fitting lid and diametrically opposite projections (20) the container including a carrying handle (30) mounted in yoke fashion on the body with opposite end parts of the handle pivotally mounted on the side wall at opposite sides of the body, characterised in that, prior to fitting of the handle the circumferential external surface of the side wall (12) is smooth without any projections, said projections (20) extend radially inwardly from the inner surface of the side wall, each projection having a recess (21) open to the exterior of the body, each end part of the handle having a spigot (32) which pivotally seats in the corresponding one of the recesses, and retaining means (24, 33) retaining each spigot in the recess.

2. A container according to Claim 1, wherein each retaining means comprises co-operating shoulders (24, 33) on the spigot and the body.

3. A container according to Claim 2, wherein the shoulder (33) on the spigot is an annular rib and a plurality of such ribs (33, 34) are provided at axially spaced intervals, the ribs defining rotary bearings journalled in the respective recess (21).

4. A container according to Claim 3, wherein each shoulder on the body comprises an annular rim (24) within the open mouth of the respective recess, the spigot and/or the rim having sufficient resilience to permit snap-engagement of the spigot in the recess.

5. A container according to any preceding claim including location means (23, 35) for releasably resiliently confining the handle in a given position relative to the body.

6. A container according to Claim 5, wherein the location means comprises resiliently interengage-

able parts (23, 35) on the end of each spigot and the adjacent end wall (22) of the respective recess (21).

Patentansprüche

1. Behälter mit einem einstückigen, aus Kunststoff-Spritzguß hergestellten Körper, der einen Boden (11), eine zylindrische Seitenwand (12) und am oberen Ende eine Mündung (13) hat, die durch einen radial nach innen vorragenden Rand (14) zur Aufnahme eines stopfenartig passenden Dekkels gebildet ist, sowie mit diametral einander gegenüberliegenden Vorsprüngen (20), wobei der Behälter einen Trage-Handgriff (30) aufweist, der nach Art eines Jochs an dem Körper derart gelagert ist, daß entgegengesetzte Endteile des Handgriffs an gegenüberliegenden Seiten des Körpers gelenkig an der Seitenwand gelagert sind, dadurch gekennzeichnet, daß vor dem Anbringen des Handgriffs die äußere Umfangsoberfläche der Seitenwand (12) ohne irgendwelche Vorsprünge glatt ist, daß sich die Vorsprünge (20) radial nach innen von der inneren Oberfläche der Seitenwand erstrecken, daß jeder Vorsprung eine Ausnehmung (21) hat, die zum Äußeren des Körpers offen ist, daß jeder Endteil des Handgriffs einen Zapfen (32) hat, der gelenkig in einer entsprechenden Ausnehmung sitzt, und daß Haltemittel (24, 33) vorgesehen sind, die jeden Japfen in der Ausnehmung halten.

2. Behälter nach Anspruch 1, bei dem die Haltemittel jeweils zusammenwirkende Schultern (24, 33) an dem Zapfen und dem Körper aufweisen.

3. Behälter nach Anspruch 2, bei dem die Schulter (33) an dem Zapfen eine ringförmige Rippe ist und eine Vielzahl solcher Rippen (33, 34) mit axialen Abständen vorgesehen sind, wobei die Rippen Drehlager bilden, die in der entsprechenden Ausnehmung (21) gelagert sind.

4. Behälter nach Anspruch 3, bei dem jede Schulter an dem Körper einen ringförmigen Rand (24) innerhalb der offenen Mündung der jeweiligen Ausnehmung aufweist, wobei der Zapfen und/oder der Rand ausreichende Nachgiebigkeit aufweisen, um einen Schnappeingriff des Zapfens in der Ausnehmung zu gestatten.

5. Behälter nach einem der vorhergehenden Ansprüche mit Lokalisierungsmitteln (23, 35), um den Handgriff in einer gegebenen Stellung relativ zu dem Körper nachgiebig und lösbar festzulegen.

6. Behälter nach Anspruch 5, bei dem die Lokalisierungsmittel nachgiebig ineinander eingreifende Teile (23, 35) an dem Ende jedes Zapfens und an der benachbarten Endwand (22) der entsprechenden Ausnehmung (21) aufweisen.

Revendications

1. Conteneur comportant un corps en une seule pièce en matière plastique moulée par injection comprenant un fond (11), une paroi latérale cylindrique (12), une embouchure (13) au niveau de la partie supérieure, délimitée par un rebord (14) s'étendant en saillie radialement vers l'intérieur pour recevoir un couvercle qui s'adapte par emboîtement et des bossages (20) diamétralement opposés, le conteneur comportant une poignée de manutention (30) montée en anse sur le corps, les parties d'extrémité opposées de la poignée étant montées oscillantes sur la paroi latérale au niveau de côtés opposés du corps, caractérisé en ce qu'avant de monter la poignée, la surface périphérique extérieure de la paroi latérale (12) est lisse et ne comporte aucun bossage, lesdits bossages (20) s'étendant radialement vers l'intérieur à partir de la surface intérieure de la paroi latérale, chaque bossage comportant une cavité (21) qui débouche à l'extérieur du corps, chaque partie d'extrémité de la poignée comportant un tourillon (32) qui est reçu en pouvant pivoter dans l'une correspondante des cavités, et en ce qu'il est prévu des moyens de retenue (24, 33) pour retenir chaque tourillon dans la cavité.

2. Conteneur suivant la revendication 1, dans lequel chacun des moyens de retenue comprend des épaulements (24, 33) qui coopèrent mutuellement, prévus sur le tourillon et sur le corps.

3. Conteneur suivant la revendication 2, dans lequel l'épaulement (33) prévu sur le tourillon, est une nervure annulaire et dans lequel plusieurs de ces nervures (33, 34) sont prévues au niveau d'intervalles espacés axialement, les nervures délimitant des surfaces de portée de rotation qui tourillonnent dans la cavité correspondante (21).

4. Conteneur suivant la revendication 3, dans lequel chaque épaulement prévu sur le corps, comprend un rebord annulaire (24) formé dans l'embouchure de la cavité correspondante le tourillon et/ou le rebord ayant une élasticité suffisante pour permettre l'engagement par enclenchement élastique du tourillon dans la cavité.

5. Conteneur suivant l'une quelconque des revendications précédentes, comportant des moyens de positionnement (23, 35) pour maintenir élastiquement et de manière libérable la poignée dans une position donnée par rapport au corps.

6. Conteneur suivant la revendication 5, dans lequel les moyens de positionnement comprennent des parties (23, 35) susceptibles de coopérer élastiquement, prévues sur l'extrémité de chaque tourillon et sur la paroi d'extrémité (22) voisine de la cavité correspondante (21).

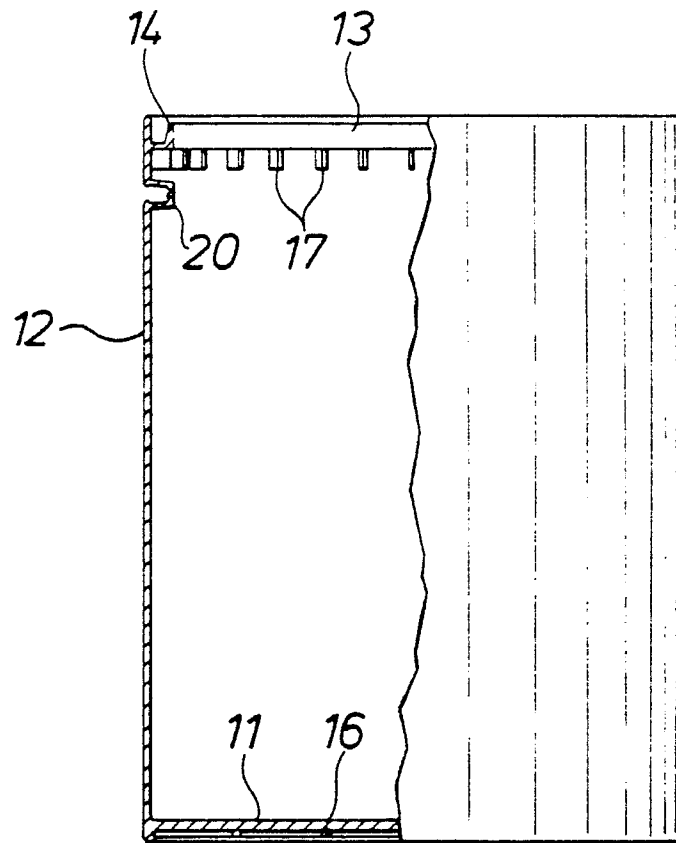


Fig. 1

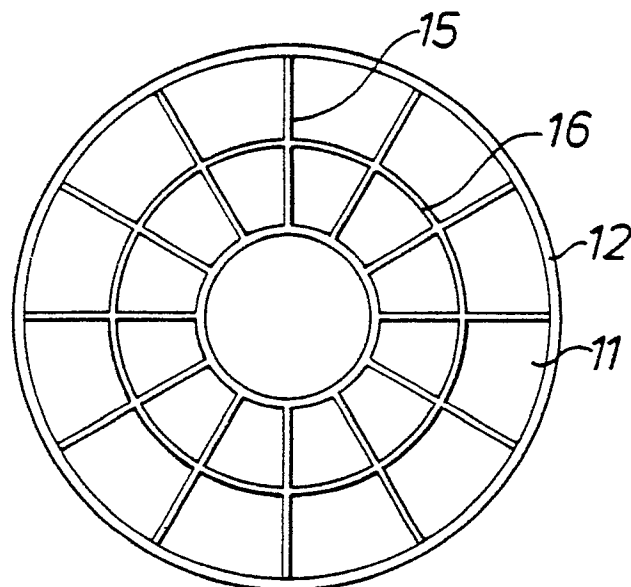


Fig. 2

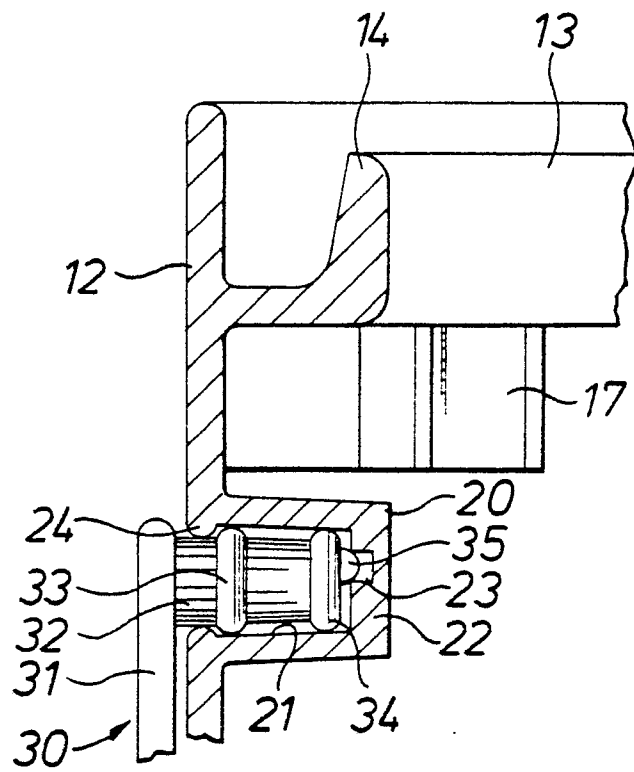


Fig. 3

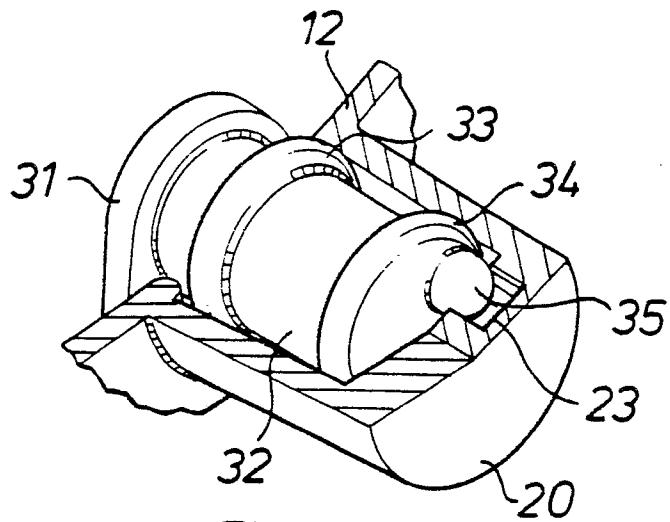


Fig. 4