

Description

This invention relates to a system for introducing flowable additive into a closed container and in particular into paint, varnish, woodstain or the like contained in a preferably lidded container. "Paint" includes traditional paints based on organic solvents and also paints based on aqueous solvents many of which are known as emulsion or latex paints. The additive may be any material which can be caused to flow well enough to enable it to be introduced into the container. The invention especially relates to a system for introducing a dose of (usually liquid or semi-solid) colourant to a base paint contained in a lidded paint can and which system is suitable for use in retail shops or stores which supply tradesmen. Such introduction of colourants into paint in shops or stores is often known as "in-store tinting". In-store tinting allows a much wider range of colours to be offered than would be possible if cans of each individual coloured paint had to be stocked. This is because the space which would be needed to stock a large number of coloured paints is much greater than the space needed to stock cans of base paint and an equivalent number of doses of colourant. Other additives which can be introduced to paint, varnish or woodstain using the system include fungicides, foaming agents, rheology modifiers, components (usually a catalyst or accelerator) of a multi-component paint or varnish or additives which modify the appearance of a paint such as flowable particulate solids such as solids which impart texture to a paint or metal flakes always provided such solids can be made to flow.

Hitherto in-store tinting has usually involved removing the lid from the can (or even punching a hole in the lid), introducing the correct dose or doses of colourant into the can, replacing the lid (or plugging the hole) and finally shaking the can in a mechanical shaker to disperse the colourant. Removal of the lid creates an opportunity for the paint, varnish or woodstain to be spilled or splashed and so this type of tinting technique is generally inconvenient and not very suitable for use by inexperienced people, especially members of the public in self-service shops. Punching a hole in the lid requires the skilled use of a sharp tool and so it is a technique which is quite unsuitable for use by inexperienced people. A further difficulty is that care is needed to ensure that the correct dose of additive is introduced into the container. This is especially so when the additive is a colourant because the eye is very sensitive to variations in shade caused by a failure to add all of the colourant. The amount of care needed can be reduced by supplying measured doses of additive in capsules specially modified to be opened only when the capsule is in communication with a container but even then care is still needed to ensure that a capsule is properly emptied. For example, French patent specification FR 2 453 793 uses a closed capsule to avoid spillage and splashing when introducing a cosmetic or pharmaceutical additive into a solvent contained in a bottle sealed across the lower part of its neck. The capsule is inserted with a sealing fit into the neck of the bottle,

the seal in the neck is then broken and the base of the capsule is cut open. Additive then falls under gravity into the bottle with no risk of spillage or splashing from the neck. However no special measures are taken to ensure that the cap is thoroughly emptied. British patent specification GB 1 131 193 similarly discloses a system for introducing additive from a rigid lower portion of a capsule into a bottle by opening the base of the capsule and allowing the additive to fall under gravity. In this case the base is knocked open by a downwards movement of a stem brought about by the compression of a bellows-like top portion of the capsule remote from the additive. Again no special measures are taken to ensure thorough emptying of the capsule.

One object of this invention is to provide a system for introducing additive from a capsule into a container with little risk of spillage and splashing and which also minimises the care needed to ensure that the capsule is properly emptied. An object of a refinement of the invention is to provide a system especially suitable for use by inexperienced members of the public. An object of another refinement is to provide a system which allows a container into which additive has been introduced to be safely shaken in a mechanical shaker.

Accordingly this invention provides a system for introducing flowable additive into paint, varnish, woodstain or the like contained in a closed container (preferably a lidded container), the system comprising

a) a closed container containing the paint, varnish, woodstain or the like provided with an inlet which is closed by an inlet closure which can be displaced inwards of the container to open the inlet,

b) a closed capsule separate from the closed container which capsule comprises a chamber which contains the flowable additive,

c) means carried by the container or capsule for use in creating an opening in the chamber which opening can communicate with the inlet into the container after the inlet has been opened and

d) co-operable locating means provided on the container and capsule which can at least assist in locating the opening created in the chamber in communication with the container via the inlet

wherein the chamber in the capsule houses a contractable volume which volume is occupied by the flowable additive and can be contracted for the purposes of positively expelling additive from the chamber through an opening created in the chamber.

This invention also provides a method for introducing flowable additive from a capsule into paint, varnish, woodstain or the like contained in a closed container (preferably a lidded container) which method comprises

a) placing the capsule in contact with the closed container

b) opening the container inlet by displacing the closure in a direction inwards of the container and

c) creating an opening in the chamber of the capsule which opening communicates with the container inlet

wherein there is used a chamber in the capsule which houses a contractable volume which volume is occupied by the flowable additive and the method also comprises contracting the volume occupied by the flowable additive so as to expel positively additive from the chamber via the created opening into the container inlet.

The invention further provides for use in a system or method according to this invention, a closed container containing paint, varnish, woodstain or the like and which comprises

a) an inlet closed by an inlet closure which can be displaced inwardly to open the container,

b) co-operable sealing means for co-operating with co-operable sealing means on a capsule to provide a replacement closure for the inlet so as to prevent spillage from the container after the inlet has been opened which sealing means is located around and is spaced from the inlet and

c) locating means co-operable with locating means on the capsule which can at least assist in locating the inlet in communication with an opening in the capsule

wherein the container is provided with a bezel extending around the inlet and also the co-operable sealing means is located below the bezel whereby the bezel can be used as a surface for supporting a gasket.

This invention further provides for use in a system or method according to the invention a capsule containing additive for paint, varnish or woodstain or the like comprising

a) a chamber housing a volume occupied by a flowable additive and

b) locating means co-operable with locating means on a closed container so as to at least assist in locating an opening created in the chamber in communication with an inlet in the container

wherein the chamber has a shape in the form of two opposed adjacent dished shapes joined around their perimeters and is compressible by a relative movement of the dished shapes towards each other whereby the volume occupied by the additive is contractable so that additive can be positively expelled from the chamber view the opening created therein.

The risk of significant amounts of additive being left in the capsule by inexperienced members of the public is minimised by the provision of means for positive expulsion of the additive from the chamber. This is especially important during in-store tinting in order to avoid variations in shade which can arise if not all the colourant is added to the basepaint. Opportunities for loss of additive by spillage and splashing are substantially reduced by the use of an inlet (i.e. the "container inlet") which is specifically designed to be openable to communicate with an opening created in a capsule chamber (i.e. the "chamber opening") together with the use of co-operable locating means which assist in locating the chamber opening in communication with the contain-

er inlet. Preferably the means for creating an opening in the chamber (i.e. the "chamber opening means") is actuated by the exertion of an external force on the capsule which force acts in a direction which is inwards of the container. Also the chamber opening means should preferably be operative only during and/or after the opening of the container inlet so that additive expelled from the chamber can immediately pass into the opened container. This further reduces the opportunities or spillage from the capsule chamber and therefore makes the system especially suitable for use by inexperienced members of the public.

Preferably the contractable volume occupied by the additive is housed within a compressible chamber which is compressible by the exertion of a force on the exterior of the capsule so as to contract the occupied volume and positively expel additive from the chamber. In an especially preferred system, the chamber is compressible in response to a force exerted on a portion of the capsule which is remote from the container so that the chamber is compressed in a direction which is inwards of the container. It is also preferred that the force which compresses the chamber, the force which operates the chamber opening means and the force which opens the inlet, should all act inwards of the container and along the same line because then the forces needed to operate the system can be conveniently supplied by opposed clamping members of a mechanical shaker. If the closed container is lidded, it is preferred that the container inlet should be formed in the lid and should be openable by a force acting inwards of the container because then the force which opens the inlet will act in a direction which urges the lid inwards of the container and so does not loosen or remove the lid from the container.

The co-operable locating means provided on the container and capsule preferably comprise a recess and a projection both dimensioned such that the recess can receive the projection.

Preferably the recess should be formed in the closed container (especially in a container lid) and the projection should extend from the capsule. An especially preferred system comprises firstly a recess formed in the container which recess leads to the inlet closure and secondly a co-operable projection on the capsule which comprises an outlet through which additive can be expelled from the capsule. Receipt of the projection into the recess further reduces the opportunities for spillage and splashing. Preferably when the projection is centrally located within the recess, the maximum clearance between the projection and the recess should not exceed 4 mm and if possible the projection should make a close fit in the recess in order to give a more positive location of the chamber opening in communication with the inlet. The inlet may comprise for example a skirt (i.e. the "inlet skirt") which extends into the container and which is closed by a closure located at the distal end of the skirt so as to define a blind recess which can receive a projection on the capsule. Preferably the projection on the capsule comprises a preformed outlet dependent from the chamber and closed (preferably at its dis-

tal end) by a displaceable closure which can be displaced to create the opening in the chamber.

The container inlet can be closed by a closure (for example a screw-cap or an adhesive pull-tab) which requires a rotational force or a force exerted in a direction outwards of the container in order to remove the closure and open the inlet. However (unless complex removal means are employed) such closures have the serious disadvantage that they need to be removed before the capsule can be located on the container and this, of course, creates a momentary opportunity for spillage. Moreover, if the container inlet is formed in a lid, the exertion of an excessive outwards force on the inlet closure may loosen or even remove the lid. Therefore it is preferred to use an inlet closure which is openable by a force exerted in a direction inwards of the container. Such a closure may be integral with the inlet. The opening of an inlet closed by an integral closure could be performed by means of a rupturing action, for example a rupturing (especially a puncturing) action imparted by a relatively sharp tool, for example a cutting edge or spike. Rupturing actions can be unpredictable and they also require the use of potentially harmful sharp tools. Therefore there are advantages in having a closure which is formed separately from the inlet and which is then engaged on the inlet by means which disengage in a relatively predeterminable way without needing the use of a sharp tool. Hence the inlet can be opened by disengaging and displacing the closure rather than by rupturing it. Examples of such predeterminable disengagement means include a frangible layer of adhesive, a frangible weld, a press fit or a snap-action fit.

The opening in the capsule chamber may likewise be created by rupturing a closure provided on a preformed outlet to the chamber (i.e. the "outlet closure"). Rupturing may be performed using opening means which comprise a sharp tool (a cutting edge or spike) carried on the container. However again because rupturing actions can be unpredictable, it is preferred to provide the chamber with a preformed outlet closed by an outlet closure formed separately from the chamber and engaged on the outlet by means which can be disengaged in a relatively predeterminable way, for example those types used to engage the inlet closure. The chamber opening is then created by disengaging and displacing the outlet closure. The disengaging and displacing means may comprise an arm carried on the outlet closure which arm extends inwardly of the chamber towards (and preferably touches) the portion of the chamber wall lying opposite the closure so that a compressing force exerted on that portion can be transmitted via the arm and exerted on the closure as both a disengaging force and a displacing force. Alternatively it has been discovered that the hydraulic pressure generated by compressing a compressible chamber is usually sufficient to disengage and displace a frangibly attached or snap-fitting outlet closure and so no additional engagement means may be needed. It is preferred that a preformed outlet on the chamber should comprise a skirt (i.e. the "outlet skirt") which is dimensioned so

as to be receivable by the inlet skirt whereby the outlet skirt can serve as a locating projection. Preferably the outlet skirt is long enough to penetrate far enough towards the closed inlet to enable a force exerted on the capsule to be transmitted via the skirt and exerted on the inlet closure in order to open the inlet. Alternatively, the distal end of the dependent outlet skirt may be provided with a displaceable closure of a type which carries an arm so that a force which opens the container inlet can be transmitted from the capsule via the arm to the inlet closure. The distal end of the arm may be provided with a stop (for example a barb) which comes up against the chamber outlet as the outlet closure is displaced and thereby prevents the arm from falling into the paint.

A capsule chamber which is compressible preferably comprises at least some walls composed of a flexible material, for example a plastics foil or an injection moulded thin plastics web. In order that the chamber be compressible in a predetermined way, it is preferred to provide at least one line of weakness and/or an angled portion of wall which extends at least part and preferably all of the way around the chamber. Preferably a line of weakness comprises a thinning of the flexible material. An angled portion may be moulded into the flexible material or it may comprise a crease or it may be made by welding. Preferably the chamber has a shape in the form of two opposed adjacent dishes joined around their perimeters. This double dish shape assists in achieving a high degree of expulsion of additive when the chamber is fully compressed. It may also be useful for the dish which is to be nearest the container to be formed with a concave curved portion adjacent its perimeter, that is to say nearer to its outermost perimeter than to its centre. It has been found that such a concave portion can co-operate with suitably shaped surfaces in the system to cause the double dish shape to collapse on compression of the chamber in such a way that the dishes exert a force which propels additive towards a central opening in the chamber. This propelling force is especially useful when the additive comprises particles of solid which do not flow easily. A preferred double dish container comprises a relatively rigid upper dish bonded (preferably welded) to a lower dish which comprises a flexible moulded thin web. Making the lower dish by injection moulding enables the thickness of the thin web to be precisely controlled and in particular it enables a line of weakness comprising a thinning of the web to be moulded into the dish. It also facilitates the moulding of an outlet skirt or other dependent projection integrally with the dish.

If all the walls of the chamber are flexible, (which is often the case when the chamber is made by blow moulding), it is preferred that the capsule should also comprise a relatively rigid member attached to (preferably adhesively bonded to) a portion of the chamber wall against which a force is to be exerted. The rigid member serves to distribute force over that portion of the chamber wall.

In addition to the co-operable locating means, it is also preferred that the container and the capsule be provided with co-operable sealing means which

can co-operate to provide a replacement closure for the container inlet so as to prevent spillage from the container after the original inlet closure has been displaced. Surprisingly, the sealing means for a system comprising a resilient lidded plastics container may for example comprise inlet and outlet skirts which are dimensioned so that one makes a sealing press fit within the other even though a sealing fit ought to create difficulties by preventing the escape of air displaced from the container by the introduction of the additive. However it has been discovered that a lidded resilient plastics container can allow escape of displaced air by means of a forced leak between the lid and its seating. Alternatively the skirts may comprise inter-engageable snap-action profiles which can co-operate to make a sealing snap-fit. Additionally or alternatively the sealing means may comprise a (preferably resilient) rim which depends from the capsule and extend around the chamber opening and which is adapted to make a snap fit in a co-operable sealing means provided on the container and which extends around the inlet. Preferably the snap action is provided by a rib receivable in a groove. It is preferred that the sealing means are so positioned that they only co-operate to provide the replacement closure after the inlet has been opened and after expulsion of the additive into the container has terminated so as to facilitate the escape of any air displaced from the container. The container may be provided with one or more catchment cavities arranged around and in communication with the container inlet. These cavities serve to trap material which may be splashed and carried out through the inlet by the escaping air although this is not a serious problem where a projection makes a close fit in the inlet.

Flexible material used in making a compressible chamber may be preferably a foil of polyethylene terephthalate or a web of injection moulded polypropylene including polypropylene modified by the presence of added rubbery material or copolymerised ethylene. Other components of the capsule and the container are preferably made from a tough resilient thermoplastics material, especially a crystalline polyolefine such as polyethylene, polypropylene or the rubber or ethylene modified polypropylenes mentioned above. Modified polypropylenes are especially suited to making lidded containers because their resilience facilitates the forced leakage of air around the lid. To avoid accidental opening of the container inlet or the capsule chamber, it is preferred that a force greater than that which can be applied by the unaided finger or thumb (for example a force of at least 0.05 kN) be required to open the inlet. Preferably the force needed to create an opening in the chamber should not exceed 3 kN and usually a force of 0.4 to 1.3 kN is most suitable.

The invention is further illustrated by the following preferred embodiments which are described with reference to the drawings of which

Figure 1 is a section of a system according to this invention and shows a capsule and part of a container,

Figure 2 is a section of the container of Figure 1 shown receiving the capsule of Figure 1,

Figure 3 is a section of the container and capsule shown in Figure 2 but after the container inlet closure has been opened,

Figure 4 is a section of the container and capsule shown in Figure 3 but after the capsule chamber has been compressed and the volume occupied by the additive contracted,

Figure 5 is a section of the container and capsule shown in Figure 4 but after the sealing means have co-operated to provide a replacement closure for the container inlet.

Figure 6 is a plan of a central fragment of the lid shown in Figures 1 to 5 and omitting disc 16,

Figure 7 is a section of an alternative system according to this invention and shows a capsule and part of a container,

Figure 8 is a section of the container of Figure 7 shown receiving the capsule,

Figure 9 is a section of the container and capsule of Figure 7 showing the capsule finally in place on the container,

Figure 10 is a plan of a central fragment of the lid shown in Figure 7,

Figure 11 is a section of a central fragment of a system of the type shown in Figure 7 but having a modified opening means and inlet closure,

Figure 12 is a section showing the fragment of Figure 11 when the opening means is fully advanced into the container,

Figure 13 is a section of an alternative capsule,

Figure 14 is a section of a capsule having an alternative closure arrangement,

Figure 15 is a section of a further alternative capsule,

Figure 16 is a section of the capsule of Figure 15 but shown after the capsule chamber has been compressed,

Figure 17 is a section of a further alternative capsule and closure,

Figure 18 to 22 are sections of alternative closures for a capsule,

Figure 23 & 24 are sections of parts of systems which use a sharp tool to create an opening and

Figure 25 is a section of an outlet and an inlet closure provided with uniting means.

Figure 1 shows a system comprising a capsule 1 and a closed container 2 which system is suitable for introducing semi-solid colourant 3 from chamber 23 to paint 4 contained in closed container 2. Container 2 consists of a polypropylene paint can 5 on which is engaged a plastics lid 6 by means of a liquid-tight snap fit provided by circumferential seating rib 7 which engages circumferential groove 8.

Lid 6 is provided with a circular closed inlet 9 having an inlet skirt 10 which extends inwardly of closed container 2 and defines a recess 9a. Inlet 9 is closed by a plug 11 engaged on distal end 12 of inlet skirt 10 by means of a fluid-tight snap fit into circumferential groove 13. Plug 11 therefore makes recess 9a blind. Lid 6 is also provided with an upstanding circular flange 15 and a stiff cardboard bridging disc 16 containing hole 20. Disc 16 serves to pro-

vide a surface which can carry printed instructions for the operation of the system. Lid 6 further provides eight radial troughs 14 and associated rebates 17 equally spaced around inlet 9 (see Figure 6) and which co-operate with bridging disc 16 to define a catchment cavity 18 which traps any droplets of colourant 3 and/or paint 4 carried through inlet 9 by displaced air escaping from container 2.

Capsule 1 is composed of circular rigid plastics cover 21 bonded by layer 22 of adhesive to compressible central circular chamber 23 which contains colourant 3 and which is provided with a circular chamber outlet 24 closed by a circular cap 25. Chamber 23 is formed by two opposed dished portions 26a and 26b of flexible polyethylene terephthalate foil which join at circumferential angled portion 26c at the outermost perimeter of the chamber to define a contractable volume occupied by colourant 3. Angled portion 26c helps to predetermine the way in which chamber 23 compresses to contract the volume occupied by the colourant 3. Lower dished portion 26b is formed with a concave curve 26d adjacent angled portion 26c. Cover 21 serves both to distribute any force applied to the top of capsule 1 over upper dished portion 26a of chamber 23 and to provide a mounting for resilient dependent annular rim 27. Rim 27 is adapted to provide part of a sealing means by the provision of circumferential rib 28 which can engage a co-operable circumferential groove 29 formed in flange 15 on lid 6 so as to provide a fluid-tight snap fit. Chamber outlet 24 has circular projecting dependent outlet skirt 30 whose diameter is small enough even when closed by cap 25 to be received with a clearance fit into blind recess 9a. The clearance see Figure 2, is 1 mm. Accordingly, outlet skirt 30 when closed by cap 25 and inlet skirt 10 can assist in locating the opening to be created in chamber 23 in communication with inlet 9. The opening will be created by disengagement of cap 25 from skirt 30.

Cap 25 closes distal edge 31 of outlet 24 by means of a fluid-tight snap fit formed by the engagement of circumferential lug 32 in circumferential recess 33. Cap 25 is formed with an integral arm 34 which extends back into chamber 23 and abuts upper dished portion 26a so that a compressive force exerted on upper dished portion 26a is transmitted downwards by arm 34.

To use the system, closed chamber outlet 24 of capsule 1 is inserted through hole 20 in disc 16 into inlet 9 and blind recess 9a until cap 25 rests on plug 11 as shown in Figure 2 whereupon inlet skirt 10 and outlet skirt 30 closed by cap 25 are in co-operation and so locate chamber opening 24 in communication with container inlet 9. Force generated outside capsule 1 is then exerted on cover 21 in a direction which (as shown by Arrow A) is transverse of lid 6 and inwards of container 2. Exerting the force in this direction avoids loosening or removing lid 6. The force is transmitted by arm 34 via cap 25 to plug 11 whereupon plug 11 is disengaged and displaced from inlet skirt 10 as shown in Figure 3 thereby opening closed inlet 9.

As shown in Figure 4, further exertion of force on cover 21 urges chamber 23 against lid 6 whereupon

on a reaction from lid 6 is transmitted via disc 16 to lower dished portion 26b of chamber 23. The combined force and reaction causes a compression of chamber 23 and a contraction of the volume occupied by colourant 3. Compression of chamber 23 causes a force to be transmitted by arm 34 which disengages and displaces cap 25 from chamber outlet 24 so creating an opening in chamber 23. Continuing compression of chamber 23 further contracts the volume occupied by colourant 3 and so positively expels colourant 3 via inlet 9 into container 2 as indicated by arrows B.

Yet further exertion of force on cover 21 causes the annular rib 27 on cover 21 to advance towards and engage flange 15 on lid 6 with a fluid-tight snap fit, so providing a replacement closure for inlet 9 which prevents spillage from container 2 via the clearance between outlet skirt 30 and inlet skirt 10. As rib 27 engages flange 15, upper dished portion 26a of chamber 23 approaches close to lower dished portion 26b and so positively expels most of the last drops of colourant 3 from chamber 23.

Finally the system may be subjected to mechanical shaking to disperse the introduced colourant 3 into paint 4. The forces which disengage and displace plug 11 and cap 25, which compress chamber 23 and which advance cover 21 into sealing engagement with flange 15 are conveniently generated by gripping capsule 1 and the base (not shown) of closed container 2 between opposed jaws of a mechanical shaker and tightening the grip.

Figure 7 shows an alternative system in which a capsule 101 and a container 102 are modified (as compared with Figure 1) so as to achieve better expulsion of colourant 103 from chamber 123.

Capsule 101 is modified by the presence of a circumferential bezel 121a around the perimeter of its circular rigid plastics cover 121. Bezel 121a enables cover 121 to make a close fit with upper dished portion 126a of the plastics foil of chamber 123. Container 102 is similarly modified by the presence of a bezel 106a on its lid 106 and around its closed inlet 109. As shown in Figure 10, the presence of bezel 106a requires a shortening (as compared with Figure 1) of radial troughs 114 which lead to catchment cavities 118.

As shown in Figure 8, advancing capsule 101 towards container 102 causes concave curved portion 126d of lower dished portion 126b to roll upwards and inwards from the perimeter of chamber 123 so exerting a force on colourant 103 which positively propels colourant 103 towards central outlet 124.

As shown in Figure 9, further advancement of capsule 101 sandwiches portions 126a and 126b of the plastics foil between now opposed bezels 121a and 106a so fully compressing chamber 123 and causing expulsion of virtually all of colourant 103. Full compression of chamber 123 also provides a gasket to assist good sealing of inlet 109 when rib 128 is engaged by groove 129.

Capsule 101 also employs a modified cap 125 and arm 134. The modification consists of providing a shed 134a which substantially reduces the amount

of colourant 103 which can become trapped in top of cap 125.

Many members of the public dislike finding the arm 134 and the plug 111 immersed in the paint 104 in container 102. Accordingly Figures 11 and 12 show further modifications which prevent arm 134 and plug 111 from falling into paint 104.

As shown in Figure 11, arm 134 is modified by the presence of a pair of barbs 134b. When capsule 101 is advanced towards container 102, barbs 134b become obstructed by upper perimeter 124a of chamber outlet 124 and therefore prevent arm 134 from falling into paint 104.

Plug 111 is modified by the presence of a central crown 111a provided with a circumferential rib 111b which can make a snap fit into circumferential groove 134c formed in arm 134. Advancing arm 134 onto crown 111a causes rib 111b to engage groove 134c so that plug 111 is held by arm 134 and is prevented from falling into paint 104.

Figure 13 shows a modification to the capsule 101 as shown in Figure 7. Capsule 101 is modified by employing a bellows 126e to define chamber 123 and the contractable volume occupied by colourant 103. Compression of bellows 126e provides an immediate positive expelling action which is useful with less flowable additives such as particulate solids. However bellows 126e is less suitable for use in the rapid expulsion of liquid colourants where the hydraulic pressure generated in the liquid may force the convex portions 126f of bellows 126e outwards causing the formation of a shape as shown in dashed lines in Figure 13. Such a shape is less efficient at expelling residual colourant 103 from compressed chamber 123.

Figure 14 shows a different modification of capsule 101 in which chamber outlet 124 has a flanged distal edge 131 and is closed by a laminated disc frangibly welded onto edge 131 and comprising low density polyethylene coating 142, aluminium foil 141, cardboard insert 143 and polypropylene shield 140. Aluminium foil 141 provides an efficient water vapour barrier. Polyethylene coating 142 provides a material which bonds well to aluminium, is easily weldable to edge 131 and can protect foil 141 from corrosion by certain colourants. Cardboard insert 143 is adhesively bonded to both foil 141 and shield 140 and serves to stiffen foil 141. Polypropylene shield 140 serves to protect the laminated disc from accidental puncturing. In use sufficient hydraulic pressure can be generated in liquid colourant 103 to detach coating 142 from distal edge 131 and displace the laminated disc.

Figure 15 shows an alternative capsule 201 containing liquid colourant 203 in a chamber 223 formed by relatively rigid dished cover portion 221 of capsule 201 and opposed dished injection moulded polypropylene web 226. Web 226 is permanently spun welded at its outermost periphery 226a to cover 221 so giving chamber 223 a circumferential angled shape. Central outlet skirt 230 defining central chamber outlet 224 is moulded integrally with web 226. Web 226 also has moulded-in concave portion 226b adjacent its periphery 226a and moulded-in hinge 226c (shown more clearly in Figure 15a)

formed by a thinning of web 226. Because of the good hinging properties of polypropylene, hinge 226c permits web 226 to flip inside out during compression of chamber 223 so that web 226 fits close to cover portion 221 as shown in Figure 16. This close fit results in a virtually total contraction of the volume occupied by colourant 203. Hinge 226c is preferably located at a point some 45 to 85% of the distance from the centre of chamber outlet 224 and the outer edge of periphery 226a.

Figure 17 shows a modification to capsule 201 of the type shown in Figure 15. Capsule 201 has a modified closure comprising a disc 241 of aluminium foil frangibly adhesively bonded to the distal edge 231 of outlet skirt 230 and a plug 240 trapped against a circular rib 243 of skirt 230. Plug 240 supports disc 241 in resisting damage by finger nails and the like.

Figures 18 to 22 show further alternative closures for the chamber outlet. In Figure 18, the closure consists of a simple disc 141 of aluminium foil frangibly adhesively bonded to distal edge 131 of outlet skirt 130. Disc 141 is disengaged and displaced by hydraulic pressure generated on compressing the capsule. The capsule is provided with a dependent cruciform projection 144.

Figure 19 shows a closure comprising a circular plug 145 adhesively bonded to the circumference of a hole 146 cut into plastics foil or web 126. Such a closure is cheap to make.

Figure 20 shows a closure comprising a disc 141 of aluminium foil frangibly adhesively bonded to distal edge 131 of outlet skirt 130 and covered by a cap 148 snap-fitted onto skirt 130. Cap 148 protects disc 141 against damage by finger nails or sharp objects. The strength of the adhesive bond and the closeness of the snap-fit are chosen so as to allow detachment and displacement of the closure by hydraulic pressure generated by compression of the capsule.

Figure 21 shows a closure comprising a circular plug 149 integrally hinged over a short distance of its circumference to a ring 150 provided with an internal rib 151. Ring 150 is spun welded to outlet skirt 130 and plug 149 is trapped against rib 151 by a simple disc 141 of aluminium foil frangibly adhesively bonded to skirt 130. Hydraulic pressure generated on compressing the capsule disengages and displaces disc 141 and also causes plug 149 to hinge downwardly. The advantage of this form of closure is that plug 149 is available to assist disc 141 in resisting damage by finger nails or the like yet plug 149 does not fall into the paint being tinted because it is retained by its hinge. If a more robust closure is needed, simple disc 141 may be replaced by a laminated disc of the type shown in Figure 14.

Figure 22 shows a closure comprising a cruciform plug 152 which is welded to outlet skirt 130 and which abuts against upper dished portion 126a of chamber 123 and indirectly against top portion 121 of the capsule. Plug 152 is located centrally by dependent projection 144. The advantage of plug 152 is that it is directly disengageable and displaceable by a force exerted downwards on top portion 121.

Figures 23 and 24 show a system comprising a capsule together with a lid of a container wherein the capsule has a chamber outlet closed by permanently bonded aluminium foil and the lid is provided with a sharp tool for rupturing the foil to create an opening in the chamber. Figure 23 shows a capsule 101 of the type described with reference to Figure 18 and the central portion of a lid 106 in place on a container (not shown) as described with reference to Figure 7 except that the inlet closure 311 is modified by the presence of a central upstanding cruciform polypropylene spike 300. Chamber outlet 124 of capsule 101 is closed by disc 141 of permanently adhesively bonded aluminium foil. On advancing capsule 101 towards lid 106, spike 300 ruptures disc 141 so creating an opening in chamber 123. This system provides a very positive rupturing of the aluminium foil but has the disadvantage of creating the opening in chamber 123 momentarily before the inlet in 106 is opened and hence capsule 123 must be advanced quickly onto lid 106 if a slight spillage of colourant is to be avoided.

Figure 24 shows a capsule 401 together with the central portion of a lid 106 in place on a container (not shown) as described with reference to Figure 7 except that lid 106 has a modified inlet closure arrangement. The modified inlet closure arrangement comprises a blind end 440 to inlet skirt 410. Blind end 440 contains a central hole 445 around which is mounted an upstanding hollow angled cylindrical metal blade 400 in the recess 409 defined by skirt 410. The inlet closure itself comprises a polypropylene plug 411 which makes a snap-fit into inlet skirt 410 and contains a central hole 446 closed by disc 447 of aluminium foil permanently adhesively bonded to plug 411. Capsule 401 contains a chamber 423 having an outlet skirt 430 leading to a chamber outlet 424 closed by disc 441 of permanently adhesively bonded aluminium foil. On advancing capsule 401 towards lid 106, outlet skirt 430 disengages plug 411 from its snap-fit and displaces it downwards whereupon foil disc 447 and subsequently foil disc 441 are ruptured by blade 400 so creating openings in lid 106 and chamber 423 respectively. On compression of chamber 423, colourant 403 is expelled through the newly created openings via hollow blade 400 and hole 445 into the container beneath lid 106. Blade 400 may alternatively be made of plastics material.

The top wall of chamber 423 is provided with a dependent circular indentation 444 having a T-shaped cross-section. Indentation 444 helps to guide colourant 403 towards chamber outlet 409 and to seal hole 445 when chamber 423 is fully compressed.

An advantage of the system shown in Figure 24 is that avoids closures falling into the paint.

Figure 25 shows an outlet closure 540 and an inlet closure 511 which have been modified so as to be mutually engageable so that only a single closure item will be found in the tinted paint. Outlet closure 540 is modified by the presence of a dependent circular "L" shaped lip 541 which is snap-engageable with an upstanding grooved rim 512 provided on inlet closure 511.

As a capsule is advanced onto a container, lip 541 snap-fits into rim 512 so uniting the closure into a single item.

Claims

1. A system for introducing flowable additive (3) into paint (4), varnish, woodstain or the like contained in a closed container (2), the system comprising

a) a closed container containing the paint, varnish, woodstain or the like which is closed by an inlet closure (11), which can be displaced inwards of the container to open the inlet,

b) a closed capsule (1) separate from the closed container which capsule comprises a chamber (23) which contains the flowable additive,

c) means (34) carried by the container or capsule for use in creating an opening in the chamber which opening can communicate with the inlet into the container after the inlet has been opened and

d) co-operable locating means (10 and 30 with 25) provided on the container and capsule which can at least assist in locating the opening created in the chamber in communication with the container via the inlet

wherein the chamber in the capsule houses a contractible volume which volume is occupied by the flowable additive and can be contracted for the purpose of positively expelling additive from the chamber through an opening created in the chamber.

2. A system as claimed in Claim 1 wherein the container and capsule are provided with co-operable snap or press fit sealing means (28, 29) which can co-operate to provide a replacement closure for the container inlet so as to prevent spillage from the container after the inlet closure has been removed.

3. A system according to Claim 1 or Claim 2 wherein the chamber has a shape in the form of two opposed adjacent dished shapes joined (26a and 26b) around their perimeters (26c).

4. A system according to any one of Claims 1 to 3 wherein the closed container (2) comprises a lid (6) and the closed inlet (9) is formed in the lid.

5. A system according to any one of the preceding Claims wherein the co-operating locating means provided on the container (2) and capsule (1) comprise a recess (9a) which receives a projection (30).

6. A system according to Claim 5 wherein the recess (9a) leads to the inlet closure (11) and the projection (30) comprises an outlet (24) through which additive (3) can be expelled from the capsule (1).

7. A system according to Claim 6 wherein the recess (9a) is defined by a skirt (10) depending from a wall (6) of the container (2) and which extends into the container and which is closed by a closure (11) located at the distal end (12) of the skirt.

8. A system according to any one of the preceding Claims wherein the chamber (23) which houses the contractible volume occupied by the additive (3) is compressible to contract the volume and positively expel the additive.

9. A system according to Claim 8 wherein the chamber (23) is compressible in response to a force

Figures 23 and 24 show a system comprising a capsule together with a lid of a container wherein the capsule has a chamber outlet closed by permanently bonded aluminium foil and the lid is provided with a sharp tool for rupturing the foil to create an opening in the chamber. Figure 23 shows a capsule 101 of the type described with reference to Figure 18 and the central portion of a lid 106 in place on a container (not shown) as described with reference to Figure 7 except that the inlet closure 311 is modified by the presence of a central upstanding cruciform polypropylene spike 300. Chamber outlet 124 of capsule 101 is closed by disc 141 of permanently adhesively bonded aluminium foil. On advancing capsule 101 towards lid 106, spike 300 ruptures disc 141 so creating an opening in chamber 123. This system provides a very positive rupturing of the aluminium foil but has the disadvantage of creating the opening in chamber 123 momentarily before the inlet in 106 is opened and hence capsule 123 must be advanced quickly onto lid 106 if a slight spillage of colourant is to be avoided.

Figure 24 shows a capsule 401 together with the central portion of a lid 106 in place on a container (not shown) as described with reference to Figure 7 except that lid 106 has a modified inlet closure arrangement. The modified inlet closure arrangement comprises a blind end 440 to inlet skirt 410. Blind end 440 contains a central hole 445 around which is mounted an upstanding hollow angled cylindrical metal blade 400 in the recess 409 defined by skirt 410. The inlet closure itself comprises a polypropylene plug 411 which makes a snap-fit into inlet skirt 410 and contains a central hole 446 closed by disc 447 of aluminium foil permanently adhesively bonded to plug 411. Capsule 401 contains a chamber 423 having an outlet skirt 430 leading to a chamber outlet 424 closed by disc 441 of permanently adhesively bonded aluminium foil. On advancing capsule 401 towards lid 106, outlet skirt 430 disengages plug 411 from its snap-fit and displaces it downwards whereupon foil disc 447 and subsequently foil disc 441 are ruptured by blade 400 so creating openings in lid 106 and chamber 423 respectively. On compression of chamber 423, colourant 403 is expelled through the newly created openings via hollow blade 400 and hole 445 into the container beneath lid 106. Blade 400 may alternatively be made of plastics material.

The top wall of chamber 423 is provided with a dependent circular indentation 444 having a T-shaped cross-section. Indentation 444 helps to guide colourant 403 towards chamber outlet 409 and to seal hole 445 when chamber 423 is fully compressed.

An advantage of the system shown in Figure 24 is that avoids closures falling into the paint.

Figure 25 shows an outlet closure 540 and an inlet closure 511 which have been modified so as to be mutually engageable so that only a single closure item will be found in the tinted paint. Outlet closure 540 is modified by the presence of a dependent circular "L" shaped lip 541 which is snap-engageable with an upstanding grooved rim 512 provided on inlet closure 511.

As a capsule is advanced onto a container, lip 541 snap-fits into rim 512 so uniting the closure into a single item.

5 Claims

1. A system for introducing flowable additive (3) into paint (4), varnish, woodstain or the like contained in a closed container (2), the system comprising

a) a closed container containing the paint, varnish, woodstain or the like which is closed by an inlet closure (11), which can be displaced inwards of the container to open the inlet,

b) a closed capsule (1) separate from the closed container which capsule comprises a chamber (23) which contains the flowable additive,

c) means (34) carried by the container or capsule for use in creating an opening in the chamber which opening can communicate with the inlet into the container after the inlet has been opened and

d) co-operable locating means (10 and 30 with 25) provided on the container and capsule which can at least assist in locating the opening created in the chamber in communication with the container via the inlet

wherein the chamber in the capsule houses a contractible volume which volume is occupied by the flowable additive and can be contracted for the purpose of positively expelling additive from the chamber through an opening created in the chamber.

2. A system as claimed in Claim 1 wherein the container and capsule are provided with co-operable snap or press fit sealing means (28, 29) which can co-operate to provide a replacement closure for the container inlet so as to prevent spillage from the container after the inlet closure has been removed.

3. A system according to Claim 1 or Claim 2 wherein the chamber has a shape in the form of two opposed adjacent dished shapes joined (26a and 26b) around their perimeters (26c).

4. A system according to any one of Claims 1 to 3 wherein the closed container (2) comprises a lid (6) and the closed inlet (9) is formed in the lid.

5. A system according to any one of the preceding Claims wherein the co-operating locating means provided on the container (2) and capsule (1) comprise a recess (9a) which receives a projection (30).

6. A system according to Claim 5 wherein the recess (9a) leads to the inlet closure (11) and the projection (30) comprises an outlet (24) through which additive (3) can be expelled from the capsule (1).

7. A system according to Claim 6 wherein the recess (9a) is defined by a skirt (10) depending from a wall (6) of the container (2) and which extends into the container and which is closed by a closure (11) located at the distal end (12) of the skirt.

8. A system according to any one of the preceding Claims wherein the chamber (23) which houses the contractible volume occupied by the additive (3) is compressible to contract the volume and positively expel the additive.

9. A system according to Claim 8 wherein the chamber (23) is compressible in response to a force



exerted on the capsule (1) in a direction which is inwards of the container (2).

10. A system according to any one of the preceding Claims wherein the chamber (23) has a shape in the form of two opposed adjacent dishes joined around their outermost perimeters (26c) and the chamber (23) has a concave curved portion (26d) adjacent its outermost perimeter (26c).

11. A system according to Claim 10 wherein the dish which is to be nearest the container has a line of weakness (226c) comprising a thinning of the dish which line of weakness extends around the dish.

12. A system according to Claim 10 or Claim 11 wherein the dish which is to be remote from the container comprises a relatively rigid circumferentially bevelled cover (121) and the container has a similarly bevelled surface (106a).

13. A system according to any one of Claims 1 to 12 wherein the container inlet (9) is closed by a closure (11) formed separately from the inlet (9) and which is engaged by the inlet by means which permit disengagement and displacement of the closure from the inlet in a predeterminable way.

14. A system according to Claim 13 wherein the container inlet (9) engages the closure (11) by means of a snap or press fit.

15. A system according to any one of the preceding Claims wherein the capsule chamber (23) comprises an outlet (24) closed by a closure (25) formed separately from the chamber and engaged on the outlet by means which permit disengagement and displacement of the closure from the outlet in a predetermined way.

16. A system according to Claim 15 wherein the outlet (24) engages the closure (25) by means of a snap fit.

17. A system according to any one of Claims 15 to 17 wherein the closure (25) is disengageable from the outlet (24) by a force directed inwardly of the container (2).

18. A system according to any one of the preceding claims wherein the means (34) for creating an opening in the chamber (23) is operative only during and/or after the opening of the container inlet (9).

19. A system according to any one of the preceding Claims in which the capsule chamber (23) comprises an outlet (24) closed by a closure (25) and wherein the outlet comprises a skirt (30) which depends from the chamber and is dimensioned so as to be receivable by a recess (9) in the container so that the outlet (24) can serve as a locating projection.

20. A system according to Claim 19 wherein the outlet skirt (30) is long enough to allow the outlet (24) to penetrate far enough into the recess (9) to enable a force exerted on the capsule (1) to be transmitted via the skirt and exerted on the inlet closure (11) in order to open the inlet (9).

21. A system according to any one of the preceding Claims wherein the container (2) and the capsule (1) are provided with co-operable sealing means (29 and 28) which can co-operate to provide a replacement closure for the container inlet and wherein the sealing means comprises inlet and outlet skirts (10

and 30) which are dimensioned so that one makes a sealing press fit within the other.

22. A system according to Claim 21 wherein the sealing means comprises a rim (27) which is dependent from the capsule (1), which extends around the opening created in the chamber (23) and which is adapted to make a snap fit with a co-operating sealing means (29) which extends around the inlet (9).

23. A method for introducing flowable additive (3) from a capsule (1) into paint (4), varnish, wood-stain or the like contained in a closed container (2) which container has an inlet (9) closed by an inlet closure (11) which method comprises

a) placing the capsule in contact with the closed container,

b) opening the container inlet by displacing the closure in a direction inwards of the container and

c) creating an opening in the chamber of the capsule which opening communicates with the container inlet wherein the chamber in the capsule houses a contractible volume which volume is occupied by the flowable additive and the method also comprises contracting the volume occupied by the flowable additive so as to expel positively additive from the chamber via the created opening into the container inlet.

24. A method according to Claim 23 wherein the container inlet (9) is opened before or during the creation of the opening in the capsule (1).

25. A method according to Claim 23 or Claim 24 wherein whilst the capsule (1) is in contact with the container (2), a force inwards of the container is exerted on the capsule whereupon the capsule experiences a reaction to the force from the container whereby the force and the reaction co-operate to contract the volume (23) in which the additive (3) is located.

26. A method according to any one of Claims 23 to 25 which comprises temporarily deforming a portion of the capsule (1) after the container inlet (1) has been opened to enable the capsule to make a snap-fit onto the container (2).

27. A method according to any one of Claims 23 to 26 which comprises

a) providing the additive (3) in a volume defined by two opposed dished shapes (26a, 26b) joined around their perimeters (26c) and

b) moving one dished shape (26b) relatively towards the other thereby contracting the volume occupied by the additive so as to positively expel the additive from the chamber.

28. A method according to Claim 27 which comprises moving the dished shape (26b) with an upwards and inwards motion thereby propelling additive (3) towards the centre of the chamber (23).

29. A method according to Claim 28 which comprises flipping the dished shape (26b) inside out.

30. A method according to any one of Claims 23 to 29 which comprises gripping the capsule whilst in contact with the container which opens the container inlet.

31. A method according to claim 30 which comprises contracting the volume housed within the container by tightening the grip of the jaws.



32. For use in a system, or method as claimed in any of the preceding Claims, a closed container (102) containing paint (4), varnish, woodstain or the like and which comprises

a) an inlet (109) closed by an inlet closure (111) which can be displaced inwardly to open the container,

b) co-operable sealing means for co-operating with co-operable sealing means on a capsule (1) to provide a replacement closure for the inlet so as to prevent spillage from the container after the inlet has been opened which sealing means is located around and is spaced from the inlet and

c) locating means (9) co-operable with locating means (3) on the capsule which can at least assist in locating the inlet in communication with an opening (124) in the capsule

wherein the container is provided with a bezel extending around the inlet and also the co-operable sealing means is located below the bezel whereby the bezel can be used as a surface for supporting a gasket.

33. A container (2, 102) as claimed in Claim 32 wherein the sealing means (29) provided on the container is able to make a snap-fit with a co-operable sealing means (28) on a capsule (1, 101).

34. A container (2) according to Claim 32 or Claim 33 provided with a recess (9a) extending inwardly of the container which can be used to locate the inlet in communication with an opening (24) in the capsule.

35. A container (2) according to any one Claims 32 to 34 wherein the inlet is defined by a skirt (10) extending inwardly of the container and which is closed by a closure (11) located at the distal end (12) of the skirt. 36. A container (2) according to any one of Claims 32 to 35 wherein the inlet (9) engages the closure (11) by means of a snap or press fit.

37. For use in a system or method as claimed in any one of Claims 1 to 31, a capsule (1) containing additive (3) for paint (4), varnish, woodstain or the like and comprising

a) a chamber (23) housing a volume occupied by a flowable additive (3) and

b) locating means (30 with 25) co-operable with locating means (10) on a closed container (2) so as to at least assist in locating an opening created in the chamber in communication with an inlet (9) in the container

wherein the chamber has a shape in the form of two opposed adjacent dished shapes (26a, 26b) joined around their perimeters (26c) and is compressible by a relative movement of the dished shapes towards each other whereby the volume occupied by the additive is contractible so that additive can be positively expelled from the chamber via the opening creating therein.

38. A capsule (1) according to Claim 37 wherein the chamber (23) has a concave portion (26d) adjacent its outermost perimeter (26c).

39. A capsule according to Claim 38 wherein the chamber (223) comprises a dish having a line of weakness (226c) comprising a thinning of the dish which line of weakness extends around the dish.

40. A capsule according to Claim 39 wherein the thinning (226c) of the dish is located at a distance

from the centre of the chamber (223) of from 45 to 85% of the distance from the centre of the chamber to the outermost perimeter of the dished shape.

41. A capsule (1) according to any one of Claims 37 to 40 wherein the capsule comprises a chamber (23) defined by at least one flexible wall (26a, 26b) and wherein the capsule also comprises a relatively rigid member (21) attached to a portion of the wall (26a) which is to be remote from a container (2) when the additive (3) is being introduced into the container.

42. A capsule according to Claim 41 wherein a relatively rigid portion (121) has a bezel (121a) which extends around the rigid portion.

43. A capsule according to Claim 42 wherein the bevelled rigid portion (221) comprises a dished shape which serves to define part of the chamber (223).

44. A capsule according to any one of Claims 37 to 43 wherein the capsule comprises a relatively rigid dished shape (223) bonded to a flexible dished shape (226).

45. A capsule (1) according to any one of Claims 37 to 44 wherein the capsule has a chamber (23) provided with a central outlet (24) defined by a skirt (30) dependant from the capsule and closed by a closure (25) formed separately from the capsule and engaged by the outlet by means (32, 33) which permit disengagement of the closure from the outlet in a pre-determined way.

46. A capsule according to Claim 45 wherein the skirt (30) engages the closure by means of a snap or press fit.

47. A capsule (1) according to any one of Claims 37 to 46 provided with sealing means (29) which can co-operate with co-operable sealing means (29) on a container (2) to sealingly engage the capsule on the container.

48. A capsule (1) according to Claim 47 wherein the sealing means (28) comprises a rim (27) dependant from and extending around the capsule and which rim is adapted to make a snap-fit with co-operable sealing means (29) on a container (2).

Revendications

1. Système pour introduire un additif (3) pouvant couler dans une peinture (4), un vernis, une teinture pour bois ou analogue, contenu dans un récipient fermé (2), le système comprenant

a) un récipient fermé contenant la peinture, le vernis, la teinture pour bois ou autre, qui est fermé par un obturateur d'entrée (11), qui peut être chassé vers l'intérieur du récipient pour ouvrir l'entrée,

b) une capsule fermée (1) séparée du récipient fermé, laquelle capsule comprend une chambre (23) qui contient l'additif pouvant couler,

c) des moyens (34) portés par le récipient ou la capsule, à utiliser pour créer une ouverture dans la chambre, laquelle ouverture peut communiquer avec l'entrée dans le récipient après que l'entrée a été ouverte, et

d) des moyens coopérants (10 et 30 avec 25) de positionnement prévus sur le récipient et la cap-



sule, qui peuvent au moins aider à positionner l'ouverture créée dans la chambre en communication avec le récipient par l'intermédiaire de l'entrée,

la chambre dans la capsule logeant un volume contractible, lequel volume est occupé par l'additif pouvant couler et peut être contracté aux fins d'expulser positivement l'additif de la chambre à travers une ouverture créée dans la chambre.

2. Système selon la revendication 1, dans lequel le récipient et la capsule sont munis de moyens d'obturation étanches coopérants (28, 29) à encliqueter ou à ajuster à force, qui peuvent coopérer pour former un obturateur de remplacement pour l'entrée du récipient afin d'empêcher tout déversement depuis le récipient après que l'obturateur d'entrée a été enlevé.

3. Système selon la revendication 1 ou la revendication 2, dans lequel la chambre présente une configuration sous la forme de deux cuvettes adjacentes opposées (26a et 26b) jointes le long de leurs périmètres (26c).

4. Système selon l'une quelconque des revendications 1 à 3, dans lequel le récipient fermé (2) comprend un couvercle (6) et l'entrée fermée (9) est formée dans le couvercle.

5. Système selon l'une quelconque des revendications précédentes, dans lequel les moyens coopérants de positionnement prévus sur le récipient (2) et la capsule (1) comprennent un évidement (9a) qui reçoit une saillie (30).

6. Système selon la revendication 5, dans lequel l'évidement (9a) conduit à l'obturateur d'entrée (11) et la saillie (30) comprend une sortie (24) à travers laquelle l'additif (3) peut être expulsé de la capsule (1).

7. Système selon la revendication 6, dans lequel l'évidement (9a) est défini par une jupe (10) s'étendant vers le bas depuis une paroi (6) du récipient (2) et qui pénètre dans le récipient, et qui est fermée par un obturateur (11) situé à l'extrémité distale (12) de la jupe.

8. Système selon l'une quelconque des revendications précédentes, dans lequel la chambre (23) qui loge le volume contractible occupé par l'additif (3) peut être comprimée pour contracter le volume et expulser positivement l'additif.

9. Système selon la revendication 8, dans lequel la chambre (23) est compressible en réponse à une force exercée sur la capsule (1) en direction de l'intérieur du récipient (2).

10. Système selon l'une quelconque des revendications précédentes, dans lequel la chambre (23) présente une configuration sous la forme de deux cuvettes adjacentes opposées jointes le long de leurs périmètres extérieurs (26c) et la chambre (23) comporte une partie arrondie concave (26d) adjacente à son périmètre extérieur (26c).

11. Système selon la revendication 10, dans lequel la cuvette qui est la plus proche du récipient présente une ligne d'affaiblissement (226c) comprenant un amincissement de la cuvette, laquelle ligne d'affaiblissement s'étend sur le pourtour de la cuvette.

12. Système selon la revendication 10 ou la revendication 11, dans lequel la cuvette qui doit être éloi-

gnée du récipient comprend un capot biseauté circonférentiellement, relativement rigide (121) et le récipient présente une surface similairement biseautée (106a).

13. Système selon l'une quelconque des revendications 1 à 12, dans lequel l'entrée (9) du récipient est fermée par un obturateur (11) formé séparément de l'entrée (9) et avec lequel l'entrée est enclenchée par des moyens qui permettent de dégager et de chasser l'obturateur de l'entrée d'une manière pouvant être prédéterminée.

14. Système selon la revendication 13, dans lequel l'entrée (9) du récipient s'enclenche avec l'obturateur (11) au moyen d'un ajustement par encliquetage ou à force.

15. Système selon l'une quelconque des revendications précédentes, dans lequel la chambre (23) de la capsule comprend une sortie (24) fermée par un obturateur (25) formé séparément de la chambre et enclenché sur l'entrée par des moyens qui permettent de dégager et de chasser l'obturateur de la sortie d'une manière prédéterminée.

16. Système selon la revendication 15, dans lequel la sortie (24) s'enclenche avec l'obturateur (25) au moyen d'un ajustement par encliquetage.

17. Système selon l'une quelconque des revendications 15 à 17, dans lequel l'obturateur (25) peut être dégagé de la sortie (24) par une force dirigée vers l'intérieur du récipient (2).

18. Système selon l'une quelconque des revendications précédentes, dans lequel les moyens (34) destinés à créer une ouverture dans la chambre (23) agissent uniquement durant et/ou après l'ouverture de l'entrée (9) du récipient.

19. Système selon l'une quelconque des revendications précédentes, dans lequel la chambre (23) de la capsule comprend une sortie (24) fermée par un obturateur (25) et dans lequel la sortie comprend une jupe (30) qui s'étend vers le bas depuis la chambre et qui est dimensionnée de façon à pouvoir être reçue par un évidement (9) situé dans le récipient afin que la sortie (24) puisse servir de saillie de positionnement.

20. Système selon la revendication 19, dans lequel la jupe (30) de sortie est assez longue pour permettre à la sortie (24) de pénétrer assez loin dans l'évidement (9) pour permettre à une force exercée sur la capsule (1) d'être transmise par l'intermédiaire de la jupe et de s'exercer sur l'obturateur (11) d'entrée afin d'ouvrir l'entrée (9).

21. Système selon l'une quelconque des revendications précédentes, dans lequel le récipient (2) et la capsule (1) sont munis de moyens coopérants (29 et 28) d'obturation étanche qui peuvent coopérer pour former un obturateur de remplacement pour l'entrée du récipient, et dans lequel les moyens d'obturation étanche comprennent des jupes (10 et 30) d'entrée et de sortie qui sont dimensionnées de manière que l'une réalise un ajustement à force d'obturation étanche dans l'autre.

22. Système selon la revendication 21, dans lequel les moyens d'obturation étanche comprennent un rebord (27) qui descend de la capsule (1), qui s'étend autour de l'ouverture créée dans la chambre (23) et qui est conçu pour réaliser un ajustement



par encliquetage avec un moyen d'obturation étanche coopérant (29) qui s'étend autour de l'entrée (9).

23. Procédé pour introduire un additif (3) pouvant couler d'une capsule (1) dans une peinture (4), un vernis, une teinture pour bois ou analogue, contenu dans un récipient fermé (2), lequel récipient comporte une entrée (9) fermée par un obturateur (11) d'entrée, lequel procédé consiste

- a) à placer la capsule en contact avec le récipient fermé,
- b) à ouvrir l'entrée du récipient en chassant l'obturateur vers l'intérieur du récipient, et
- c) à créer une ouverture dans la chambre de la capsule, laquelle ouverture communique avec l'entrée du récipient,

procédé dans lequel la chambre dans la capsule loge un volume contractible, lequel volume est occupé par l'additif pouvant coulisser, le procédé consistant aussi à contracter le volume occupé par l'additif pouvant couler afin d'expulser positivement l'additif de la chambre dans l'entrée du récipient en passant par l'ouverture créée.

24. Procédé selon la revendication 23, dans lequel l'entrée (9) du récipient est ouverte avant ou pendant la création de l'ouverture dans la capsule (1).

25. Procédé selon la revendication 23 ou la revendication 24, dans lequel, pendant que la capsule (1) est en contact avec le récipient (2), une force orientée vers l'intérieur du récipient est exercée sur la capsule, à la suite de quoi la capsule subit une réaction à la force depuis le récipient de manière que la force et la réaction coopèrent pour contracter le volume (23) dans lequel l'additif (3) est situé.

26. Procédé selon l'une quelconque des revendications 23 et 25, qui consiste à déformer temporairement une partie de la capsule (1) après que l'entrée (1) du récipient a été ouverte pour permettre à la capsule de réaliser un ajustement à encliquetage sur le récipient (2).

27. Procédé selon l'une quelconque des revendications 23 à 26, qui consiste

- a) à placer l'additif (3) dans un volume défini par deux cuvettes opposées (26a, 26b) jointes le long de leurs périmètres (26c), et
- b) à déplacer une cuvette (26b) vers l'autre afin de contracter le volume occupé par l'additif pour expulser positivement l'additif de la chambre.

28. Procédé selon la revendication 27, qui consiste à déplacer la cuvette (26b) en un mouvement dirigé vers le haut et vers l'intérieur, propulsant ainsi l'additif (3) vers le centre de la chambre (23).

29. Procédé selon la revendication 28, qui consiste à retourner sur elle-même la cuvette (26b).

30. Procédé selon l'une quelconque des revendications 23 à 29, qui consiste à serrer la capsule tandis qu'elle est en contact avec le récipient, ce qui ouvre l'entrée du récipient.

31. Procédé selon la revendication 30, qui consiste à contracter le volume logé à l'intérieur du récipient en serrant la prise des mâchoires.

32. Pour une utilisation dans un système, ou un procédé selon l'une quelconque des revendications

précédentes, un récipient fermé (102) contenant une peinture (4), un vernis, une peinture pour bois ou analogue, et qui comprend

- a) une entrée (109) fermée par un obturateur d'entrée (111) qui peut être chassé vers l'intérieur pour ouvrir le récipient,
- b) des moyens d'obturation étanche coopérants destinés à coopérer avec des moyens d'obturation étanche coopérants situés sur une capsule (1) afin de former un obturateur de remplacement pour l'entrée de manière à empêcher tout déversement depuis le récipient après que l'entrée a été ouverte, lesquels moyens d'obturation étanche sont positionnés autour et à distance de l'entrée, et

c) des moyens de positionnement (9) pouvant coopérer avec des moyens de positionnement (3) situés sur la capsule, qui peuvent au moins aider à positionner l'entrée en communication avec une ouverture (124) de la capsule, le récipient étant pourvu d'un biseau s'étendant autour de l'entrée et, de plus, les moyens d'obturation étanche coopérants étant situés au-dessous du biseau de manière que le biseau puisse être utilisé comme surface destinée à supporter une garniture.

33. Récipient (2, 102) selon la revendication 32, dans lequel les moyens d'obturation étanche (29) prévus sur le récipient peuvent réaliser un ajustement par encliquetage avec des moyens d'obturation étanche coopérants (28) situés sur une capsule (1, 101).

34. Récipient (2) selon la revendication 32 ou la revendication 33, présentant un évidement (9a) s'étendant vers l'intérieur du récipient et qui peut être utilisé pour positionner l'entrée en communication avec une ouverture (24) de la capsule.

35. Récipient (2) selon l'une quelconque des revendications 32 à 34, dans lequel l'entrée est définie par une jupe (10) s'étendant vers l'intérieur du récipient et qui est fermée par un obturateur (11) situé à l'extrémité distale (12) de la jupe.

36. Récipient (2) selon l'une des revendications 32 à 35, dans lequel l'entrée (9) s'enclenche avec l'obturateur (11) au moyen d'un ajustement par encliquetage ou serré.

37. Pour une utilisation dans un système ou un procédé selon l'une quelconque des revendications 1 à 31, une capsule (1) contenant un additif (3) pour une peinture (4), un vernis, une teinture pour bois ou analogue, et comprenant

- a) une chambre (23) logeant un volume occupé par un additif (3) pouvant couler, et
- b) des moyens de positionnement (30 avec 25) pouvant coopérer avec des moyens de positionnement (10) situés sur un récipient fermé (2) afin au moins d'aider au positionnement d'une ouverture créée dans la chambre en communication avec une entrée (9) du récipient, la chambre ayant une configuration sous la forme de deux cuvettes adjacentes opposées (26a, 26b) jointes le long de leurs périmètres (26c) et pouvant être comprimée par un mouvement relatif des cuvettes l'une vers l'autre de manière que le volume occupé par l'additif puisse être contracté afin que l'additif puis-



se être expulsé positivement de la chambre en passant par l'ouverture créée dans celle-ci.

38. Capsule (1) selon la revendication 37, dans laquelle la chambre (23) comporte une partie concave (26d) adjacente à son périmètre extérieur (26c).

39. Capsule selon la revendication 38, dans laquelle la chambre (223) comprend une cuvette ayant une ligne d'affaiblissement (226c) comprenant un amincissement de la cuvette, laquelle ligne d'affaiblissement s'étend sur le pourtour de la cuvette.

40. Capsule selon la revendication 39, dans laquelle l'amincissement (226c) de la cuvette est situé à une distance à partir du centre de la chambre (223) comprise entre 45 et 85% de la distance allant du centre de la chambre jusqu'au périmètre extérieur de la cuvette.

41. Capsule (1) selon l'une quelconque des revendications 37 à 40, dans laquelle la capsule comprend une chambre (23) définie par au moins une paroi flexible (26a, 26b), et dans laquelle la capsule comprend aussi un élément relativement rigide (21) relié à une partie de la paroi (26a) qui doit être éloignée d'un récipient (2) pendant l'introduction de l'additif (3) dans le récipient.

42. Capsule selon la revendication 41, dans laquelle une partie relativement rigide (121) comporte un biseau (121a) qui s'étend autour de la partie rigide.

43. Capsule selon la revendication 42, dans laquelle la partie rigide biseautée (221) comprend une cuvette qui sert à définir une partie de la chambre (223).

44. Capsule selon l'une quelconque des revendications 37 à 43, dans laquelle la capsule comprend une cuvette relativement rigide (223) liée à une cuvette flexible (226).

45. Capsule (1) selon l'une quelconque des revendications 37 à 44, dans laquelle la capsule comporte une chambre (23) pourvue d'une sortie centrale (24) définie par une jupe (30) qui s'étend vers le bas depuis la capsule et qui est fermée par un obturateur (25) formé séparément de la capsule et avec lequel la sortie est enclenchée par des moyens (32, 33) qui permettent de dégager l'obturateur de la sortie d'une manière prédéterminée.

46. Capsule selon la revendication 45, dans laquelle la jupe (30) s'enclenche avec l'obturateur au moyen d'un ajustement par encliquetage ou serré.

47. Capsule (1) selon l'une quelconque des revendications 37 à 46, pourvue de moyens (29) d'obturation étanche qui peuvent coopérer avec des moyens d'obturation étanche coopérants (29) situés sur un récipient (2) pour enclencher de façon étanche la capsule sur le récipient.

48. Capsule (1) selon la revendication 47, dans laquelle les moyens d'obturation étanche (28) comprennent un rebord (27) partant vers le bas et s'étendant autour de la capsule, lequel rebord est conçu pour réaliser un ajustement par encliquetage avec des moyens d'obturation étanche coopérants (29) situés sur un récipient (2).

Patentansprüche

1. System zum Zugeben eines fließfähigen Zusatzes (3) zu einer Farbe (4), einem Lack, einer Beize oder dergleichen, die sich in einem geschlossenen Behälter (2) befinden, welches System folgendes aufweist:

a) einen geschlossenen, die Farbe, den Lack, die Beize oder dergleichen enthaltenden Behälter, der durch einen Einlaßverschluß (11) geschlossen ist, der in das Innere des Behälters gedrückt werden kann, um den Einlaß zu öffnen,

b) eine geschlossene Kapsel (1), die vom geschlossenen Behälter getrennt ist, welche Kapsel eine Kammer (23) aufweist, die den fließfähigen Zusatz enthält,

c) auf dem Behälter oder der Kapsel befindliche Mittel (34) zur Erzeugung einer Öffnung in der Kammer, welche Öffnung mit dem Einlaß in den Behälter in Verbindung stehen kann, nachdem der Einlaß geöffnet worden ist, und

d) zusammenarbeitende Lokalisierungsmittel (10 und 30 mit 25), die auf dem Behälter und der Kapsel vorgesehen sind und es ermöglichen, die in der Kammer erzeugte Öffnung mit dem Behälter über den Einlaß in Verbindung zu bringen,

wobei die Kammer in der Kapsel ein verkleinerbares Volumen umgibt, welches durch den fließfähigen Zusatz eingenommen wird und welches zum Austreiben des Zusatzes aus der Kammer durch die in der Kammer erzeugte Öffnung verkleinert werden kann.

2. System nach Anspruch 1, bei welchem der Behälter und die Kapsel mit zusammenarbeitenden Schnapp- oder Preßsitzdichtungsmitteln (28, 29) ausgerüstet sind, welche zusammenarbeiten können, um einen Ersatzverschluß für den Behältereinlaß zu bilden, so daß ein Verschütten aus dem Behälter vermieden wird, nachdem der Einlaßverschluß entfernt worden ist.

3. System nach Anspruch 1 oder 2, bei welchem die Kammer die Form von zwei einander gegenüberliegenden, benachbarten tellerartigen Teilen (26a und 26b) aufweist, die rund um ihren Umfang (26c) miteinander verbunden sind.

4. System nach einem der Ansprüche 1 bis 3, bei welchem der geschlossene Behälter (2) einen Deckel (6) aufweist und der geschlossene Einlaß (9) im Deckel ausgebildet ist.

5. System nach einem der vorhergehenden Ansprüche, bei welchem die zusammenarbeitenden Lokalisierungsmittel, die auf dem Behälter (2) und der Kapsel (1) vorgesehen ist, eine Vertiefung (9a) aufweisen, welche einen Vorsprung (30) aufnimmt.

6. System nach Anspruch 5, bei welchem die Vertiefung zu dem Einlaßverschluß (11) führt und der Vorsprung (30) einen Auslaß (24) aufweist, durch welchen der Zusatz (3) aus der Kapsel (1) ausgetrieben werden kann.

7. System nach Anspruch 6, bei welchem die Vertiefung (9a) durch eine Schürze (10) definiert wird, die von einer Wandung (6) des Behälters (2) absteht und die sich in den Behälter erstreckt und die durch einen Verschluß (11) geschlossen ist, der am freien Ende (12) der Schürze angeordnet ist.



8. System nach einem der vorhergehenden Ansprüche, bei welchem die Kammer (23), welche das durch den Zusatz (3) eingenommene, verkleinerbare Volumen enthält, zusammendrückbar ist, um das Volumen zu verkleinern und den Zusatz auszutreiben.

9. System nach Anspruch 8, bei welchem die Kammer (23) durch eine Kraft zusammendrückbar ist, die auf die Kapsel (1) in einer Richtung zum Inneren des Behälters (2) ausgeübt wird.

10. System nach einem der vorhergehenden Ansprüche, bei welchem die Kammer (23) die Form von zwei einander gegenüberliegenden benachbarten Tellern aufweist, die rund um ihren äußeren Rand (26c) miteinander verbunden sind, und die Kammer (23) in der Nachbarschaft ihres äußeren Randes (26c) einen konkav gekrümmten Abschnitt (26d) aufweist.

11. System nach Anspruch 10, bei welchem der Teller, der dem Behälter näher liegt, eine Schwächungslinie (226c) aufweist, die eine Verringerung der Dicke des Tellers verursacht, wobei die Schwächungslinie sich rund um den Teller erstreckt.

12. System nach Anspruch 10 oder 11, bei welchem der Teller, der von dem Behälter entfernter liegt, eine verhältnismäßig steife, um den Umfang herum abgeschrägte Abdeckung (121) und der Behälter eine ähnlich abgeschrägte Oberfläche (106a) aufweist.

13. System nach einem der Ansprüche 1 bis 12, bei welchem der Behältereinlaß (9) durch einen Verschuß (11) verschlossen ist, der gesondert vom Einlaß (9) ausgebildet ist und durch den Einlaß durch Mittel festgehalten wird, die ein Lösen und Entfernen des Verschlusses vom Einlaß in einer vorbestimmten Weise gestatten.

14. System nach Anspruch 13, bei welchem der Behältereinlaß (9) den Verschuß (11) mit Hilfe eines Schnapp- oder Preßsitzes festhält.

15. System nach einem der vorhergehenden Ansprüche, bei welchem die Kapselkammer (23) einen Auslaß (24) aufweist, der durch einen Verschuß (25) geschlossen ist, welcher gesondert von der Kammer ausgebildet und mit dem Auslaß durch Mittel verbunden ist, die ein Lösen und Entfernen des Verschlusses vom Auslaß in einer vorbestimmten Weise gestatten.

16. System nach Anspruch 15, bei welchem der Auslaß (24) den Verschuß (25) durch einen Schnapp- oder Preßsitz festhält.

17. System nach einem der Ansprüche 15 bis 17, bei welchem der Verschuß (25) vom Auslaß (24) durch eine Kraft lösbar ist, die zum Inneren des Behälters (2) gerichtet ist.

18. System nach einem der vorhergehenden Ansprüche, bei welchem die Mittel (34) zur Erzeugung einer Öffnung in der Kammer (23) nur während und/oder nach dem Öffnen des Behältereinlasses (9) wirksam sind.

19. System nach einem der vorhergehenden Ansprüche, bei welchem die Kapselkammer (23) einen Auslaß (24) aufweist, der durch einen Verschuß (25) geschlossen ist, und bei welchem der Auslaß eine Schürze (30) aufweist, die von der Kammer absteht und so dimensioniert ist, daß sie von dem Ein-

laß (9) in den Behälter aufgenommen werden kann, so daß der Auslaß (24) als Lokalisierungsvorsprung dienen kann.

20. System nach Anspruch 19, bei welchem die Auslaßschürze (30) so lang ist, daß der Auslaß (24) weit genug in den Einlaß (9) vordringen kann, damit eine auf die Kapsel (1) ausgeübte Kraft über die Schürze übertragen und auf den Einlaßverschluß (11) ausgeübt werden kann, um den Einlaß (9) zu öffnen.

21. System nach einem der vorhergehenden Ansprüche, bei welchem der Behälter (2) und die Kapsel (1) mit zusammenarbeitenden Dichtungsmitteln (29 und 28) ausgerüstet sind, welche zusammenarbeiten können, um einen Ersatzverschluß für den Behältereinlaß zu bilden, und bei welchem die Dichtungsmittel Einlaß- und Auslaßschürzen (10 und 30) aufweisen, die so dimensioniert sind, daß die eine einen dichtenden Preßsitz in der anderen bildet.

22. System nach Anspruch 21, bei welchem die Dichtungsmittel einen von der Kapsel (1) abstehenden Rand (27) aufweisen, der sich rund um die in der Kammer (23) erzeugte Öffnung erstreckt und der so ausgebildet ist, daß er einen Schnapp- oder Preßsitz mit zusammenarbeitenden Dichtungsmitteln (29) bilden kann, die sich rund um den Einlaß (9) erstrecken.

23. Verfahren zum Zugeben eines fließfähigen Zusatzes (3) aus einer Kapsel (1) zu einer Farbe (4), einem Lack, einer Beize oder dergleichen, die sich in einem geschlossenen Behälter (2) befinden, welcher Behälter einen durch einen Einlaßverschluß (11) geschlossenen Einlaß (9) aufweist, welches Verfahren folgendes umfaßt:

a) Auflegen der Kapsel auf den geschlossenen Behälter,

b) Öffnen des Behältereinlasses durch Entfernen des Verschlusses in eine Richtung zum Inneren des Behälters und

c) Erzeugen einer Öffnung in der Kammer der Kapsel, welche Öffnung mit dem Behältereinlaß in Verbindung steht,

wobei die Kammer in der Kapsel ein verkleinerbares Volumen umgibt, welches durch den fließfähigen Zusatz eingenommen wird und welches zum Austreiben des Zusatzes aus der Kammer durch die in der Kammer erzeugte Öffnung verkleinert werden kann.

24. Verfahren nach Anspruch 23, bei welchem der Behältereinlaß (9) vor oder während der Erzeugung der Öffnung in der Kapsel (1) geöffnet wird.

25. Verfahren nach Anspruch 23 oder 24, bei welchem, während die Kapsel (1) mit dem Behälter (2) in Berührung ist, eine Kraft zum Inneren des Behälters auf die Kapsel ausgeübt wird, worauf die Kapsel durch den Behälter eine Gegenkraft gegen die genannte Kraft erfährt, wobei die Kraft und die Gegenkraft zusammenarbeiten, um das Volumen (23) zu verkleinern, in welchem sich der Zusatz (3) befindet.

26. Verfahren nach einem der Ansprüche 23 bis 25, bei welchem ein Teil der Kapsel (1) zeitweilig verformt wird, nachdem der Behältereinlaß (1) geöffnet worden ist, damit die Kapsel auf dem Behälter (2) einen Schnapp- oder Preßsitz bilden kann.

27. Verfahren nach einem der Ansprüche 23 bis 26, welches folgendes umfaßt:



a) Einbringen des Zusatzes (3) in ein Volumen, das durch zwei einandergegenüberliegende tellerartige Teile (26a, 26b) definiert wird, die rund um ihren Rand (26c) miteinander verbunden sind, und

b) Bewegen eines tellerartigen Teiles (26b) relativ gegen das andere, wodurch das durch den Zusatz eingenommene Volumen verkleinert wird, um den Zusatz aus der Kammer auszutreiben.

28. Verfahren nach Anspruch 27, bei welchem das tellerartige Teil (26b) nach oben und innen bewegt wird, wodurch Zusatz (3) gegen das Zentrum der Kammer (23) getrieben wird.

29. Verfahren nach Anspruch 28, bei welchem das tellerartige Teil (26b) umgestülpt wird.

30. Verfahren nach einem der Ansprüche 23 bis 29, bei welchem die Kapsel, während sie sich in Berührung mit dem Behälter befindet, ergriffen wird, wodurch der Behältereinlaß geöffnet wird.

31. Verfahren nach Anspruch 30, bei welchem das im Behälter befindliche Volumen durch Erhöhen des Drucks von Backen verkleinert wird.

32. Geschlossener Behälter (102), der eine Farbe (4), einen Lack, eine Beize oder dergleichen enthält, für die Verwendung in einem System oder einem Verfahren nach einem der vorhergehenden Ansprüche, welcher folgendes aufweist:

a) einen Einlaß (109), der durch einen Einlaßverschluß (111) geschlossen ist, welcher zum Öffnen des Behälters nach innen entfernt werden kann,

b) zusammenarbeitende Dichtungsmittel für die Zusammenarbeit mit zusammenarbeitenden Dichtungsmitteln auf einer Kapsel (1), um einen Ersatzverschluß für den Einlaß zu schaffen, so daß ein Verschütten aus dem Behälter vermieden wird, nachdem der Einlaß geöffnet worden ist, welche Dichtungsmittel rund um den und im Abstand von dem Einlaß angeordnet sind, und

c) Lokalisierungsmittel (9), die mit Lokalisierungsmitteln (3) auf der Kapsel zusammenarbeiten und die es ermöglichen, den Einlaß mit einer Öffnung (124) in der Kapsel in Verbindung zu bringen, wobei der Behälter mit einer sich rund um den Einlaß erstreckenden Schrägfläche versehen ist und die zusammenarbeitenden Dichtungseinrichtungen unterhalb der Schrägfläche angeordnet sind, wodurch die Schrägfläche als Oberfläche für die Abstützung einer Dichtung verwendet werden kann.

33. Behälter (2, 102) nach Anspruch 32, bei welchem die Dichtungsmittel (29), die auf dem Behälter vorgesehen sind, einen Schnappsitz mit zusammenarbeitenden Dichtungsmitteln (28) auf einer Kapsel (1, 101) bilden können.

34. Behälter (2) nach Anspruch 32 oder 33, welcher mit einer Vertiefung (9a) ausgerüstet ist, die sich zum Inneren des Behälters erstreckt und die zur Lokalisierung des Einlasses bezüglich einer Öffnung (24) in der Kapsel verwendet werden kann.

35. Behälter (2) nach einem der Ansprüche 32 bis 34, bei welchem der Einlaß durch eine Schürze (10) definiert wird, die sich nach innen, in den Behälter erstreckt und die durch einen Verschuß (11) geschlossen ist, der am freien Ende (12) der Schürze angeordnet

36. Behälter (2) nach einem der Ansprüche 32 bis 35, bei welchem der Einlaß (9) den Verschuß (11) mit Hilfe eines Schnapp- oder Preßsitzes festhält.

37. Kapsel (11), die einen Zusatz (3) für eine Farbe (4), einen Lack, eine Beize oder dergleichen enthält, für die Verwendung in einem System oder einem Verfahren nach einem der Ansprüche 1 bis 31, welche folgendes aufweist:

a) eine Kammer (23), die ein durch einen fließfähigen Zusatz (3) eingenommenes Volumen umgibt, und

b) Lokalisierungsmittel (30 mit 25), die mit Lokalisierungsmitteln (10) auf einem geschlossenen Behälter (2) zusammenarbeiten, so daß sie die Lokalisierung einer in der Kammer erzeugten Öffnung bezüglich eines Einlasses (9) im Behälter unterstützen,

wobei die Kammer die Form von zwei einander gegenüberliegenden benachbarten tellerartigen Teilen (26a, 26b) aufweist, die rund um ihren Rand (26c) miteinander verbunden sind, wobei die Kammer durch eine Relativbewegung der tellerartigen Teile gegeneinander zusammendrückbar ist, wodurch das vom Zusatz eingenommene Volumen verkleinerbar ist, so daß der Zusatz aus der Kammer über die darin erzeugte Öffnung ausgetrieben werden kann.

38. Kapsel (1) nach Anspruch 37, bei welcher die Kammer (32) einen konkaven Abschnitt (26d) in Nachbarschaft ihres äußeren Randes (26c) aufweist.

39. Kapsel nach Anspruch 38, bei welcher die Kammer (223) einen Teller mit einer Schwächungslinie (226c) aufweist, die eine Verringerung der Dicke des Tellers verursacht, wobei die Schwächungslinie sich rund um den Teller erstreckt.

40. Kapsel nach Anspruch 39, bei welcher die Schwächung (226c) des Tellers in einem Abstand vom Zentrum der Kammer (223) angeordnet ist, der 45 bis 85% des Abstands vom Zentrum der Kammer zum äußeren Umfang des tellerartigen Teils beträgt.

41. Kapsel (1) nach einem der Ansprüche 37 bis 40, bei welcher die Kapsel eine Kammer (23) aufweist, die durch mindestens eine flexible Wandung (26a, 26b) definiert wird, wobei die Kapsel außerdem ein verhältnismäßig starres Teil (21) besitzt, das an einem Teil der Wandung (26a) befestigt ist, die von einem Behälter (2) abgewandt ist, wenn der Zusatz (3) in den Behälter eingeführt wird.

42. Kapsel nach Anspruch 41, bei welcher ein verhältnismäßig starres Teil (121) eine Schrägfläche (121a) aufweist, die sich rund um das starre Teil erstreckt.

43. Kapsel nach Anspruch 42, bei welcher das abgeschrägte starre Teil (221) ein tellerartiges Teil aufweist, das dazu dient einen Teil der Kammer (223) zu definieren.

44. Kapsel nach einem der Ansprüche 37 bis 43, bei welcher die Kapsel ein verhältnismäßig starres tellerartiges Teil (223) aufweist, das mit einem flexiblen tellerartigen Teil (226) verbunden ist.

45. Kapsel (1) nach einem der Ansprüche 37 bis 44, bei welcher die Kapsel eine Kammer (23) aufweist, die mit einem zentralen Auslaß (24) ausgerüstet ist, der durch eine Schürze (30) definiert wird, die von der Kapsel absteht und die durch einen Ver-



schluß (25) geschlossen ist, der gesondert von der Kapsel ausgebildet ist und durch den Auslaß durch Mittel (32, 33) festgehalten wird, die ein Entfernen des Verschlusses von dem Auslaß in einer vorbestimmten Weise gestatten.

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46. Kapsel nach Anspruch 45, bei welcher die Schürze (30) den Verschuß mit Hilfe eines Schnapp- oder Preßsitzes festhält.

47. Kapsel (1) nach einem der Ansprüche 37 bis 46, welche mit Dichtungsmitteln (29) ausgerüstet ist, die mit zusammenarbeitenden Dichtungsmitteln (29) auf einem Behälter (2) zusammenarbeiten können, um die Kapsel auf dem Behälter dichtend festzuhalten.

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48. Kapsel (1) nach Anspruch 47, bei welcher die Dichtungsmittel (28) einen Rand (27) aufweisen, der von der Kapsel absteht und sich rund um dieselbe erstreckt, welcher Rand dazu geeignet ist, einen Schnappsitz mit zusammenarbeitenden Dichtungsmitteln (29) auf einem Behälter (2) zu bilden.

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