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AUSTRALIA
PATENTS ACT 1990
NOTICE OF ENTITLEMENT

We, **Ing. Erich Pfeiffer GmbH** (formerly known as Ing. Erich Pfeiffer GmbH Co. KG), the applicant/Nominated Person in respect of Application No. 67226/94 state the following:-

The Nominated Person is entitled to the grant of the patent because the Nominated Person would, on the grant of a patent for the invention to the inventor, be entitled to have the patent assigned to the Nominated Person.

The Nominated Person is entitled to claim priority from the applications listed in the declaration under Article 8 of the PCT because the Nominated Person made the applications listed in the declaration under Article 8 of the PCT.

DATED this TWELFTH day of JANUARY 1996

Keith Davies

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a member of the firm of
DAVIES COLLISON CAVE
for and on behalf of the
applicant(s)

(DCC ref: 1780636)

AU9467226

(12) PATENT ABRIDGMENT (11) Document No. AU-B-67226/94
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 690552

(54) Title
DEVICE FOR TRANSFERRING MEDIA

International Patent Classification(s)
(51)[5] B65D 083/00 B05B 011/04

(21) Application No. : 67226/94 (22) Application Date : 28.04.94

(87) PCT Publication Number : WO94/25371

(30) Priority Data

(31) Number	(32) Date	(33) Country
4314762	05.05.93	DE GERMANY
4403755	08.02.94	DE GERMANY

(43) Publication Date : 21.11.94

(44) Publication Date of Accepted Application : 30.04.98

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(57) Claim

1. A dispenser for discharging media comprising:

at least two containers including an outer container and an inner container at least partly located within said outer container, said inner container including a foil wall made from a slack and foldable foil, said foil wall supporting against an inside face of said outer container when said foil wall is unfolded and reaches a maximum fully widened state, wherein in said fully widened state said foil wall is substantially free of tensile stresses.

OPI DATE 21/11/94 APPLN. ID 67226/94
AOJP DATE 05/01/95 PCT NUMBER PCT/EP94/01343

AU9467226

(51) Internationale Patentklassifikation 5 :
B65D 83/00, B05B 11/04

A1

(11) Internationale Veröffentlichungsnummer: WO 94/25371

(43) Internationales Veröffentlichungsdatum: 10. November 1994 (10.11.94)

(21) Internationales Aktenzeichen: PCT/EP94/01343

(22) Internationales Anmeldedatum: 28. April 1994 (28.04.94)

(30) Prioritätsdaten:
P 43 14 762.3 5. Mai 1993 (05.05.93) DE
P 44 03 755.4 8. Februar 1994 (08.02.94) DE

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(81) Bestimmungsstaaten: AU, BB, BG, BR, BY, CA, CN, CZ, FI, GE, HU, JP, KG, KP, KR, KZ, LK, LV, MD, MG, MN, MW, NO, NZ, PL, RO, RU, SD, SI, SK, TJ, TT, UA, US, UZ, VN, europäisches Patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI Patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Veröffentlicht

Mit internationalem Recherchenbericht.
Vor Ablauf der für Änderungen der Ansprüche zugelassenen Frist. Veröffentlichung wird wiederholt falls Änderungen eintreffen.

690552

(54) Title: DEVICE FOR TRANSFERRING MEDIA

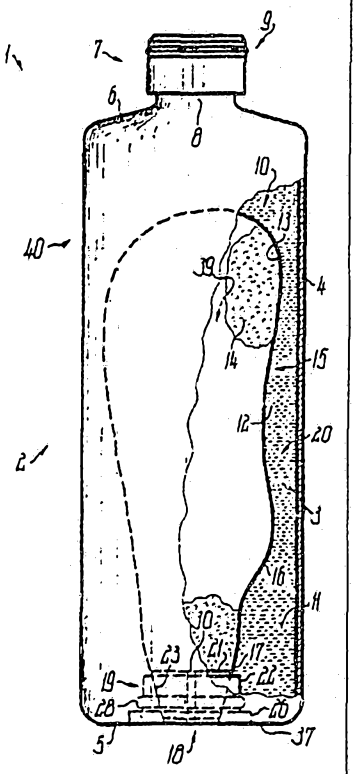
(54) Bezeichnung: AUSTRAGVORRICHTUNG FÜR MEDIEN

(57) Abstract

In a transfer device (1), inside and/or outside a containment space (3) of a storage vessel (2), an equalization container (15) is provided for an equalization medium (14) which progressively fills that area (13) of the containment space (3) that is enlarged as a result of discharge of the use-medium (11) from another area (12) of the containment space (3). This encapsulated containment space (3) prevents contamination of the stored use-medium (11), thus making it possible to forgo the addition of preservatives or the like.

(57) Zusammenfassung

Bei einer Austragvorrichtung (1) ist innerhalb und/oder außerhalb eines Behälterraumes (3) eines Speichergefässes (2) ein Ausgleichsbehälter (15) für ein Ausgleichsmedium (14) vorgesehen, das denjenigen Raumbereich (13) des Behälterraumes (3) nach und nach füllt, welcher durch Austrag des Brauch-Mediums (11) aus einem weiteren Raumbereich (12) des Behälterraumes (3) größer wird. Durch diese verkapselte Belüftung des Behälterraumes (3) werden Verunreinigungen des gespeicherten Brauch-Mediums (11) vermieden, so daß auf den Zusatz von Konservierungsstoffen oder dgl. verzichtet werden kann.



DESCRIPTION

DISCHARGE DEVICE FOR MEDIA

The invention relates to a discharge device for one or more media, which can be gaseous, liquid, pasty, pulverulent, powder-like, etc. and/or a mixture of such use media to be discharged, as well as to a method for the manufacture thereof.

Before or after the first discharge of a use medium from a container space, such as a tank, pump space or the like, the container can be filled only partly with the use medium and then the remaining volume of the container space filled with a replacement medium not primarily intended for discharge. The replacement medium can be a medium which does not react with and/or physically dissolve in the use medium, so that despite the close juxtaposition the two media are clearly separated from one another. However, the replacement medium can contain impurities such as dirt, bacteria, etc., which react with the use medium and then spoils the latter for its intended medical, cosmetic or other use. In order to avoid this risk it is possible to add to the use or replacement medium preservatives, stabilizers or similar substances, but these are frequently not desired due to medical side effects, for cost reasons, etc.

In accordance with the present invention, there is provided a dispenser for discharging media comprising:

at least two containers including an outer container and an inner container at least partly located within said outer container, said inner container including a foil wall made from a slack and foldable foil, said foil wall supporting against an inside face of said outer container when said foil wall is unfolded and reaches a maximum fully widened state, wherein in said fully widened state said foil wall is substantially free of tensile stresses.

Embodiments of the invention aim to provide a discharge device and a method of the indicated type, which avoid the disadvantages of known constructions or of the indicated type and in which in particular undesired contamination of the use medium can be significantly

reduced or avoided for as long as said medium is not discharged and is instead stored in a manner sealed with respect to the exterior.

For solving this problem there is one or at least one compensating and/or reception container for receiving a single or several different replacement media and the reception space thereof is substantially closed with respect to one or the particular associated container space at least in one operating state. If the reception container is only partly or not in contact with the use medium, it can be filled e.g. with a replacement medium free from impurities or can be externally hermetically sealed against the penetration of

impurities and, as required, the replacement medium can be delivered to areas of the container space free from the use medium by means of one or more line connections. However, it is particularly appropriate if a reception container is bounded with a container wall or the like directly with respect to the use medium or the container space areas free from the use medium are partly, largely or virtually completely filled and namely essentially independently thereof with which variable filling level or to which percentage the use medium fills the container space. Unlike in the case of a climbing or drag member, etc., no large-surface, tight sliding seats are required, which can scarcely be rendered tight against the penetration of impurities.

In spite of this as a result of the inventive construction of the space area taken up in volume-variable manner by the use medium bounding is possible substantially independently of the total volume of the container space approximately to the volume of the filling with the use medium, so that there is always an at least approximate complete filling of said space with the use medium only. In the areas in which the use filling is not adjacent to the container vessel, said use filling is substantially only adjacent to the position-variable container wall of the reception container, so that as a result of the construction according to the invention instead of for the said actions said construction may only be suitable for protecting the use filling against shaking movements.

Independently of the described effects and actions the reception container adjacent to the use filling can also be provided for influencing the pressure of said use filling or in the container space by position variation of a container wall or the like, e.g. for the suction of a vacuum or for the discharge of the use medium for producing an overpressure or in other pressure modifications caused to bring about the damping thereof. In addition, one wall of a reception container can be pretensioned in at least one operating state and/or can engage in raisable manner on the inside of a vessel wall and can therefore elastically support the same. In addition, a reception container can be solely provided for displacing the stored use medium substantially completely from the container space and/or for acquiring the external shape of a vessel substantially independently of the emptying level, because e.g. the reception container restores the walls of the vessel following their

cupping or indentation, optionally by means of the medium located between it and the wall.

A reception container for a medium separate from the use medium is suitable for virtually random discharge devices or vessels, e.g. bottles, tubes, pump or cylinder spaces of thrust piston pumps, etc., bag casks, canisters, tanks, etc. If the use medium is highly volatile or easily ignitable, with a reception container or replacement medium dangerous gaseous mixtures can be expelled substantially completely from the container space.

A reception container for the indicated or other purposes is appropriately not constructed as a bellows, whose wall forms over most areas of its extension prefolded joint zones and instead the wall can assume random folds diverging therefrom and is advantageously sufficiently flexible that the reception container in the emptied state forms a bending-slack bladder, whose facing wall areas engage on one another with their insides without any particular force expenditure. Thus, in the empty state the reception container can be reduced to a space volume, which is significantly smaller than 1/2, 1/4 or a 1/10 to at least 1/50 of its space volume in the maximum filled operating state.

For filling or emptying a reception container and/or container space, it is possible to provide a valve, which is controlled in flow or pressure-dependent manner by mechanical actuation, particularly in such a way that a flow therethrough can only take place in one direction, whereas in the case of flows in the other direction its passage cross-section is reduced or completely closed. The discharge mechanism provided in the vicinity of an outlet, which can also be formed by a vessel-separate pump unit or a thrust piston pump, a bellows pump, etc. and through which the use medium flows during discharge, can influence or bring about the control of the reception container passage. For example, substantially before, during and/or after the outflow of the use medium the reception container passage can be closed or opened. In particular, the control is so provided that substantially only due to a vacuum resulting from the discharge of a charge of the use medium in the container space, the replacement medium or the reception container is exposed to an attracting action, which leads to its propagation into those space areas of the container space which have become free due to use medium discharge.

The reception container can admittedly be partly or completely inserted in the container space through an opening provided in the vicinity of an emptying opening or formed by the latter and said opening can optionally also be used as an assembly or fitting opening for the positionally secured anchoring of the reception container within the container space. However, it is appropriate to use for this purpose a remote or separate assembly or fitting opening, which e.g. traverses a wall or bottom wall of the vessel facing the container space discharge zone. An assembly wall, which can be simultaneously also used for the positionally secure anchoring of an associated reception container portion, is appropriately made by profiling or the like much more dimensionally rigid than in particular walls connected thereto at right angles. This or another assembly wall can also be reinforced by a type of cross-sectional thickening, e.g. by a separate body, such as a mounting support, flange, closure for the assembly opening, valve case or the like. Instead of being filled through an opening in the vicinity of the outlet zone, the vessel space can also be filled with the use medium through an assembly opening and only then is the associated reception container inserted and fitted and the assembly opening closed by it. The reception container, including the closure can form a preassembled constructional unit, which is appropriately inserted in stop-limited manner in the assembly opening in such a way that its portions optionally located on the outside of the vessel or the discharge device are located in a completely countersunk or flush manner in a depression of the outside thereof.

Independently of the described constructions the compensating container or the like can be made from the same material or a material with the same characteristics as the remaining boundaries of the container space, e.g. so as not to bring the use medium into contact with different materials, or in order to facilitate a pure-type reuse of the container materials without complicated prior sorting. The inside of the outer container can be provided in all areas coming into contact with the medium with a film-thin or similar lining or coating of a corresponding material, which is appropriately constructed in one piece with the volume-variable compensating or filling body. This filling body is advantageously invertable through an opening in one piece therewith and/or bounded from the outer container accompanied by the turning over of the inside so as to form the outside, so that it can be transferred from its outer

position into an inner position in the outer container or in the reverse direction. The opening can be narrower or of the same width as the greatest or median width of the particular container, as a function of the flexibility of the walls of the invertable container. The inversion or bringing of the filling body into the outer container can take place mechanically or additionally or exclusively by at least one driving fluid, which brings about a vacuum constricting or sucking in the filling body in the outer container and/or an overpressure conveying the filling body into the outer container.

Advantageously the lining or the substantially maximum widened filling body engages in full surface manner on the inside of the outer container in a substantially fold-free manner and engages both on the circumference and on the front faces and optionally in the vicinity of container openings or connecting pieces, so that a complete emptying of the container space without leaving any cavities is possible. This can in particular be achieved if the outer container is constructed as a mould for the lining or the filling body. If the container body or filling body is produced from an e.g. hollow, cup-shaped, sleeve-like or tubular blank, accompanied by a reduction of the wall thickness by stretching, following the production of the outer container the lining or filling body can be brought into its finished shape, whilst also the outer container undergoes said shaping. For shaping purposes the outer, lining or filling container, optionally under a suitably increased temperature, can be exposed to a fluid pressure in the interior and/or on the outer circumference exposed to a vacuum and can thereby be shaped against a mould, which only forms a negative shape of the outer shape or mould. This makes it possible to carry out production by an extrusion or blowing process.

Independently of the described constructions it is also possible to produce two mutually closing and optionally separate space-bounding containers in one operation together and/or partially to substantially or even completely in one piece form. At least wall parts of the two containers can have widely varying wall thicknesses representing 5, 10 or 15 times and said values can represent minimum or maximum limits. For example, the walls of a container can be intrinsically stiff and those of the other container can have a much lower strength, so that it is bending-slack or foldable in film-like manner. The two containers can be prefabricated in the reciprocal outer layer and then

appropriately the less stiff container is at least partly transferred into the stiffer container.

The constructions according to the invention are also suitable for so-called squeeze bottles from which medium is discharged in that the squeeze container is manually compressed and consequently the medium located therein is subject to an overpressure or discharge pressure. In these or similar containers from two containers receiving separate media by applying the same manual discharge/actuating pressure simultaneously, successively or in time-overlapping manner a medium can be discharged from both containers and separate outlet openings, a common outlet opening and/or with a position-constant orientation of the discharge device outside the particular discharge opening can be supplied to an application point. For example, the inner container can be exposed by a pressure rise in the outer container by means of the fluid contained therein to the action of an overpressure through which the medium contained therein is discharged. In the case of a pressure relief the compensating space of the inner container can then be refilled by a volume corresponding to the volume discharged therefrom, plus the volume discharged from the outer or medium container. If, as is conceivable, in the compensating container no medium is sucked from the outside-adjacent outlet opening of the discharge device or medium container, a separate suction opening from the compensating container outlet opening can be provided and is e.g. linked with the atmosphere. For controlling said discharge or refilling of the compensating container it is possible to provide a corresponding valve control, optionally with alternately or displaced opening and closing valves, which operate in a pressure and/or path-dependent or mechanically controlled manner.

The present invention also provides a method for manufacturing a dispenser of the type described, whereby an inner container is made to include walls consisting from a slack bendable foil and whereby an outer container is made to receive said inner container, wherein said outer container and said inner container are shaped while being directly interconnected.

The container space to be filled, prior to filling, is preferably appropriately reduced to a substantially or completely cavity-free volume and is then so filled with the medium that it is only widened to the volume of the particular medium introduced until it has taken up its

predetermined filling quantity. This completely .vents the penetration of extraneous medium or air to the filling space and the discha' 'evice in the filled starting state can be filled in bubble-free manner. The use of a volume-variable compensating container enables filling to take place under an overpressure, which works against the internal pressure of the compensating container and leads to its accompanying emptying or reduction and/or the compensating container can by means of evacuation be placed under a vacuum, which leads to a suction of the medium into the container space.

In each case the particular container, e.g. the compensating container, can be so constricted during emptying by a random folding, wrinkling or the like of its walls that facing walls are engaged against one another in substantially gap-free manner by their insides or the container is substantially to completely cavity-free and only takes up a volume corresponding to one or at the most four to five times the material volume of its walls. In particular if the inner container engages in large to complete-surface manner on the inside of the outer container in the maximum widened state, the inner container has on the outside at least one or spaced projections, such as folds, ribs or similar spacers, which instead of or in addition to can be provided on the inside of the outer container and through which passage gaps are left open for the medium even if the inner container has engaged on the inside of the outer container. This also avoids the inner container subdividing the outer container into two tightly mutually separated container spaces. As a result of the wrinkled or disordered folding of the inner container it is also possible to ensure that even on its outside no inclusions or closed chambers form, which on emptying the container space could form by constriction and medium

filling so that this also ensures a complete emptying of all the medium stored

These and further features can be gathered from the claims, description and drawings and the individual features, both singly and in the form of sub-combinations, can be implemented in an embodiment of the invention and in other fields and can represent advantageous, independently protectable constructions for which protection is hereby claimed. Embodiments of the invention are described in greater detail hereinafter relative to the drawings, wherein show:

Fig. 1 A discharge device according to the invention in a part sectional view.

Fig. 2 The discharge device of fig. 1 in a larger-scale detail.

Figs. 3 and 4 Further embodiments in representations corresponding to fig. 2.

Figs. 5 and 6 Embodiments in the finished state.

Fig. 7 A blank for producing the discharge device according to fig. 6.

Fig. 8 Another embodiment in a representation corresponding to fig. 5.

Fig. 9 Another embodiment of a discharge device.

Fig. 10 A detail of another embodiment.

Figs. 11 and 12 Two further embodiments in representations corresponding to fig. 1.

The discharge device 1 has an elongated, bottle-shaped vessel 2 in the form of a thin-walled, hollow vessel body made from soft elastic plastic, which bounds a container space 3 of corresponding shape and which can almost completely be grasped by a hand. The vessel body 2 is substantially formed by

continuously approximately constantly thick vessel walls 4 to 6, whose thickness is below 5 or 2 mm and can be approximately 1 mm. An approximately cylindrical vessel jacket 4 is connected at one end in one piece to an optionally ring disk-like bottom wall 5 at right angles thereto and at the other end in the vicinity of a discharge zone 7 to a front wall 6, through which the use medium can be discharged outwards into the open from the vessel 2 by means of a vessel neck 8, the bottom wall 5 and/or the front wall 6, unlike the vessel jacket 4, being substantially dimensionally stable. On or in the dimensionally stable neck 8 projecting outwards in one piece from the front wall 6 is provided a discharge mechanism 9 with a base body inserted in a substantially positionally fixed and centred manner through which the use medium is discharged.

According to the invention for such a or some other discharge device 1 at least one filling compensating means 10 is provided so as to wholly or partly fill the use medium-free space area 13 of the container space 3 in such a way that the area 3 is adjacent in large surface-flush manner directly with the space area 12 taken up by the medium 11. Through flow movements of the medium 11 the two space areas 12, 13 can be shaped in complimentary manner in such a way that e.g. in the case of position changes of the vessel 2 the specifically lighter space area 13 always tends to rise upwards with respect to the space area 12. In the upright position according to fig. 1 consequently the space area 13 is stretched by buoyancy in the direction of the discharge zone 7, whereas it rises towards the bottom wall 5 in the inverted upside down position.

The space area 13 is substantially completely taken up by a compensating or supplementary medium 14, which with respect to the space area 12 is enclosed in sealed manner in a reception container 15, which is here located in substantially completely encapsulated manner within the container space 3 and like its container wall 16 is substantially freely movable with respect to said space 3 or the space area 12 over most of its extension in the direction of one, two or three space axes. The through, one-piece and approximately constantly thick container wall 16 is substantially bending-slack, but self-restoring tensile elastic and/or by tensile elongation permanently deformable without tearing. Without any damage it can be uniformly folded at any random

point and therefore the reception container 15 can be so crumpled together that the reception space surrounded by it is reduced towards a zero volume. Through filling with the medium 14 the reception container 15 can be brought to its maximum volume size accompanied by unfolding in continuous manner to all intermediate sizes and in each case longitudinally and/or transversely linking portions of the reception container 15 or the container wall 16 can be deformed or moved substantially independently of one another in said directions and/or at right angles to the surface thereof and can therefore be adapted to random distributions of the medium 11 in the container space 3 or the space area 12. With a maximum volume size the reception container 15 can almost completely or at least 80 to 90% fill the container space 3.

At one end the reception container 15 comprising e.g. a seamless bag of a wrinkle film passes into a container neck 17 or a bag rim, which is constructed in one piece with the remaining container wall 16 and in the tautly widened state can have roughly the same width as the connecting, exposed longitudinal portions of the bag, or can be reduced compared therewith as in the fitted state. In the vicinity of the container neck 17 the reception container 15 is fixed with respect to the container space 3 with a mounting support 18 at a single point 19 located adjacent to the boundary of the space 3, whereas all the remaining areas of the reception container 15 are freely movable in each of the said directions up to a flat-engaging stopping on the vessel walls 4 to 6 with respect to the container space 3.

The reception container 15 forms with the mounting support 18 or one or two mounting support bodies 21, 22 a subassembly 20 preassembled separately from the vessel and which also in the case of a tightly closed discharge zone 7 can be so installed on the vessel 2 that the bodies 21, 22 are connected in their predetermined functional position with the reception container 15. This subassembly 20 , which can optionally be introduced through the neck 8, is then inserted from the outside of an associated vessel wall 5 with most of its extension in the container space 3 and is fixed with respect to the vessel wall 5 by the mounting support 18.

The two approximately coaxial or interengaging mounting support bodies 21, 22 form with approximately complimentary circumferential surfaces a sealing and

force fit 23, in whose clamping gap is tautly spread out the container neck 17 and/or fixed in constricted form by a wrinkle fold. A mounting support body 21 is in substantially whole-surface engagement with the inside or inner circumference of the container neck 17 and the other mounting support body 22 engages on the outside or on the outer circumference of approximately the same longitudinal portion of the container neck 17. The clamping faces of the clamping seat 23 are self-locking, acute-angled to conical with approximately the same cone angle and constricted to the outer end of the container neck 17, so that the inner mounting support body 21 formed on the outer circumference of its surface can be inserted from the interior of the reception container 15 into the outer mounting support body 22. The clamping gap of the clamping seat 23 extending up to the outside of the vessel 2 can only be sealed by the container neck 17 located in it and/or consequently both against the use medium 11 and against the compensating medium 14 in that between the container neck 17 and the particular clamping or supporting face a direct sealing or adhesive connection is provided, which can be a melt connection, a bonding connection, etc.

Instead of this or in addition thereto, for sealing a supporting gap it is possible to provide a seal 24, e.g. a ring seal. The mounting support body 21 can also be so preassembled with the reception container 15, that the container neck 17 is fixed in its longitudinal direction with respect to said body 21. For this purpose a holding and a clamping member is provided, which clamps the container neck 17 against the outer circumference of the body 21 and/or secures same by cross-sectional deformation. The holding member can be formed by the seal 24 and so engages in a circumferential groove in the supporting face of the body 21 with radial pretension that it clamps the container neck 17 in this area in whole-surface manner against the bottom face of the circumferential groove or depression. Following this preassembly the container neck 17, together with the mounting support body 21 and the holding member 24 can be axially inserted into the mounting support member 22 up to abutment and at the end of the inserting movement a snap connection locks and its snap member can also be formed by the seal 24. For this purpose the supporting face of the mounting support member 22 can also have a depression, circumferential groove or similar snap countermember adapted to the snap member 24, in which sealingly locks under pretension the seal 24 projecting outwards over

the supporting face of the body 21. As the reception container 15 following on to the container neck 17 is highly flexible, its container wall 16 can be applied to its rear end face in the plugging direction for the fitting of the mounting support body 21 and can be pressed into its assembly position via the container wall 16 of the body 21. In this fitting or assembly position said end face of the mounting support member 21 appropriately projects slightly over the associated end face of the mounting support member 22, the clamping fit 23 extending appropriately approximately up to the latter end face.

The mounting support body 22 which, like the mounting support body 21, is essentially dimensionally stable forms with its end facing the container space 3 a centring portion 25 projecting freely into the space area 12 and which at the outer end passes in one piece into a ring disk-like support flange 26 projecting over its outer circumference and is closely adapted to an assembly opening 27 traversing the vessel wall 5. This assembly opening 27 is narrower than the inside width or diameter of the container space 3 or the vessel wall 4 following on to the vessel wall 5, so that the container neck 17 and centring portion 25 have a radial spacing with respect to the inside of the vessel wall 4. With a limited axial spacing from the inner, circular, front or support face of the support flange 26 the centring portion 25 carries in a ring groove a circular seal 28 which, like the seal 24, is made from rubber-elastic, resilient material and is cross-sectionally elastically deformable by squeezing. By means of said seal 28 the space area 12 is sealed against the outside in the vicinity of the assembly opening 27. The seal 28 and/or another member can also form a snap member of a snap connection 29 with which the mounting support member 22 is secured against the vessel wall 5 in substantially axial clearance-free manner by axial bracing both positively and against rotation in frictionally gripping manner. On inserting the mounting support body 22 preassembled with the seal 28 in the assembly opening 27, the seal 28 is initially automatically radially constricted by sliding along the inner circumference of the opening 27 and then engages over both the inside of the vessel wall 5 and the inner circumference of the assembly opening 27 in such a way that the support face of the support flange 26 engages under the pretension of the seal 28 on the outer face of the vessel wall 5. From the inner front or end face of the mounting support body 21 or

22 the reception container 15 then extends freely into the container space 3.

It is conceivable to construct the reception container 15 in completely hermetically sealed manner optionally as a bladder floating freely in the container space 3 and e.g. to fill it with a medium, such as a reagent upstream of the closure only openable by destruction and which adapting to the emptying of the space area 12 undergoes expansion. However, a particularly simple construction is obtained if the reception container 15 or the space area 13 is so refillable corresponding to the reduction in the space area 12 that in said space areas 12, 13, at least in the operative state of the discharge device 1, approximately atmospheric pressure prevails. For this purpose a compensating passage 30 is provided belonging to the subassembly 20 and which traverses the mounting support 18 or mounting support body 21 in such a way that it forms a line connection between the interior and exterior of the reception container 15, which in space-saving manner is located at least partly or completely within the container neck 17.

Here the passage 30 forms a connection between the container interior and the outer atmosphere, so that in the reception container 15 or the space area 13 it is possible to suck from the outside of the container space 3 air with a lower flow resistance than it can be ejected again to the outside. These actions could admittedly be obtained with a corresponding operation by constructing the passage 30 as a flow restrictor, but a faster response thereof is obtained if a control valve 31, such as a one-way or check valve is provided, which forms a component of the subassembly 20 or the subassembly formed by the reception container 15 and mounting support body 21.

The passage 30 or valve 31 is located roughly in the central axis of the mounting support 18, which can also be the central axis of the vessel 2, container space 3, vessel walls 4, 5, 6, discharge zone 7, neck 8 and/or discharge mechanism 9, provided that these components are mutually coaxial. A central area of the one-piece mounting support body 1 forms a valve casing 32, in which is freely movable a circular or disk-shaped valve body 33 without a valve spring between a closed position and an open position. In the closed position the end face of the valve body 33 engages on a ring disk-like valve seat 34 of the valve case 32 and in the open position the valve body 33

engages with the other front face on a valve stop 35, which is formed by a sleeve inserted in a widened bore portion of the valve case 32 and formed by an associated portion of the passage 30. The valve 31 closes for an over-pressure and opens for a vacuum in the reception container 15.

The end or insert opening 36 of the through, substantially linear passage outwardly displaced with respect to the valve seat 34 and remote from the interior of the reception container 15 is so countersunk or flush with respect to the outside of the associated vessel wall 5 or support flange 26 surrounding it, that it can scarcely be closed accidentally even if the outside of the vessel 2 is located on a support face. Radially outside the inlet opening 36 or the support flange 26 the vessel wall 5 forms a circular outside 37 as a stable base for the discharge device 1 and within said outside 37 the vessel wall 5 on the outside forms a depression 38 in which is located in completely flush manner with respect to the outside 37 the support flange 26. As the outer face of the mounting support member 21 is slightly set back compared with that of the mounting support member 22 and in said end face the inlet opening 36 is located, said opening 36 can also be secured against accidental closure by the outer end face of the body 22.

The discharge device 1 is appropriately equipped with a pump 40 with which on the one hand the use medium 11 can be discharged via the discharge zone 7 and on the other the quantity of the specifically heavier compensating medium 14 located in the reception space 39 of the reception container 15 can be modified, e.g. during the return of the pump 40 to the starting position following a pump stroke can be increased by suction. The pump 40 is here constructed in the manner of a bellows or squeezing pump, namely being operable by the manual constriction of the vessel wall 40 and therefore the outer circumference of the container space 3. The pump 40 is e.g. resiliently self-restoring in that the vessel 2, following compression and release, as a result of its inherent elasticity returns approximately to its starting shape of the container space 3. On operating the pump 40 a pressure rise is brought about in the pump or container space 3, namely in the space area 12 and space area 13 or in the reception space 39 through which the valve 31 is closed and an outlet valve 44 associated with an outlet duct 43 of the discharge mechanism 9 is opened in pressure-dependent manner. Therefore the use medium 11 passes

via an inlet 42 of the outlet duct 43 spaced opposite the vessel wall 6 within the container space into the reception container 15, traverses the valve 44 and passes out of the outlet opening 45 located on the outside of the discharge device 1 or the discharge mechanism 9 and which optionally, prior to the initial use, can be formed by a completely closed wall, which must be perforated for opening purposes. Operation also leads to a pressure rise of the medium 14 which then, by means of the wall 16, can slowly discharge the medium 11 in the manner of a resilient energy accumulator.

If at the end of this pump stroke the pump 40 is freed from operation, it automatically returns to the starting position, so that a vacuum is formed in the container space 3 or space area 12 or 13 and consequently the valve 31 is opened, so that in the manner of a venting of the container space 3 air is sucked from the outside into the reception container 15 in such a way that the volume of said container 15 is increased by unfolding and/or expansion of its container wall 16 roughly by the volume made free by the preceding discharge of the use medium 11 in the container space 3. At the start of said suction the valve 44 closes e.g. in pressure-dependent manner and/or before or at the latest on opening the valve 31, so that by means of the outlet 45 no air can be sucked from the outside into the container space 3 or the space area 12. The pump can also be formed by the discharge mechanism 9 and can e.g. be constructed as a bellows and/or piston pump and then the vessel wall can also be dimensionally rigid.

With increasing emptying of the space area 12 the reception container 15 is widened, so that the use medium 11 can be redistributed in the vessel space 3 due to the changing gravitational conditions caused by changes to the position of the vessel 2 and correspondingly adapts to the shape of the reception container 15. The container wall 16 can be temporarily flat or slightly adhesively engaged with the inside of the vessel wall 4 to 6 and is then detached again and rendered spaced by the medium 11. Preferably the use medium 11 is not or less compressible than the compensating medium 14, which with the reception container 15 can form in the container space 3 a displacement or core body scavenged over most of its circumference. The container wall 16 can also engage in the manner of a climbing member in increasing form along the inside with the vessel wall 4 in the direction of the discharge zone 7, so that the

space area 12 does not surround the space area 13 in the manner of an envelope and is instead separated transversely to the central axis from the space area 13 by the interposed front portion of the container wall 16.

The container space 3 with the discharge zone 7 can be filled in the upside down position through the assembly opening 27 with the use medium 11 and only then is the subassembly 20 inserted and the filling opening 27 closed. The substantially empty reception container 15 can initially be applied to or forced into the medium in the container space 3 and then shortly before or during the production of the seal or the snap connection 29 by means of the inlet opening 36 and with a limited overpressure sufficient compensating medium can be forced into the container 15 that the latter fills all the areas of the container space 3 still free from the use medium 11 and in said areas air which was previously present can escape outwards along the still not snapped in seal 28. The inventive construction is also only suitable for such a bubble-free filling of a container space 3 or space area 12. Filling can also take place via the discharge zone 7.

Instead of or in addition thereto it is possible to provide an outlet closure 46 which, during said filling or non-use of the discharge device 1, keeps closed in pressure-tight manner the outlet 45 or outlet duct 43 and/or when providing an outlet valve 44 its valve body 48. A pin 49 or the like removable outwardly in non-destructive manner and then reinsertable prior to the discharge of the use medium 11 can form a closure pin for the outlet opening 45 and/or a positively acting holding down device for the valve body 48. Appropriately the pin 49 is a component of a snap cover 50 or the like, which can be engaged by means of a snap connection on the outer end of the discharge mechanism 9, the pin 49 projecting from the inside of the cover end wall.

In figs. 3 to 12 corresponding parts are given the same reference numerals, but followed by different letters. All the features of claims 1 to 12 can be interchanged or used additively and/or in combination with one another. Thus, several reception containers, mounting supports or filling compensators or discharge devices or mechanisms can be provided for the same container space or separate vessels can be provided or in a single vessel there can be separate container spaces and/or space areas, so that e.g. separate use media can

be discharged as a function of one another or simultaneously and/or independently of one another with the same discharge device. The container space with the inside of its vessel jacket can also form a cylinder path for a pump piston with which in axially succeeding partial strokes individual discharge charges can be pressed out, e.g. via a discharge duct traversing the pump piston or plunger.

In the embodiment according to fig. 3 the mounting support 18a only has one mounting support body 21a, the mounting support faces of the force fit 23a being formed by the outer circumferential surface of the centring portion 25a of the body 29a and the inner circumference of the assembly opening 27a. The snap member 28a is constructed in one piece with the mounting support body 21a as a radial collar 28a projecting over the centring portion 25a connected to the inner end of the body 21a. Over said inner end project several circumferentially mutually spaced snap cams 32a, which form a valve cage for receiving the valve body 33a, so that this small number of only two components is all that is needed for the mounting and the valve 31a, which, like the valve body 33a, is positioned substantially freely within the reception space 39a. The outer end of the container neck 17a can be located between the support face of the support flange 26a constructed in one piece with the mounting support body 21a and the outside of the vessel wall 5a and also has a pressure-tight securing manner in the way described.

Whereas in fig. 2 the outlet valve 44 is constructed as a one-way or check valve, whose valve body 48 can be moved without the action of a valve spring in pressure-dependent manner only between the closed and open positions, the valve 44a according to fig. 3 has a valve spring 51 constructed in one piece with the valve seat in the manner of a disk valve and which is traversed by an associated portion of the outlet duct 43a forming the outlet 45a and is formed by the front wall of a ring body fixed to the vessel 2a. The valve seat engages on the inside of the valve spring 51 remote from the outlet 45a and whose radially inner area associated with the valve seat is axially movable with respect to its radially outer, axially fixed area. This inner area is maintained in the closed position against the valve body 48a by a torus 49a of the cover 50a surrounding in ring-like radially spaced and approximately tight manner the outlet 45a and which as a pin projects freely from the inside of

the valve spring 51 in the direction of the outlet 45a and is essentially not located within the neck, but follows on to its outer front face.

Whereas in the embodiments according to figs. 1 to 3 the neck 8, 8a with respect to the vessel walls 4 to 6 is dimensionally stable by wall thickening or has a snap collar for fixing the discharge mechanism 9 or 9a, the neck 8b of fig. 4 has roughly the same thickness as the vessel walls. The outer end of the neck which is much narrower than the vessel jacket is cross-sectionally angled for forming an approximately planar, ring disk-like neck flange 52 projecting over its outer circumference and also said neck flange 52 used for the snap fixing of the discharge mechanism 9b has roughly the same thickness as the vessel walls or the neck jacket connected to the vessel wall 6a.

The outlet valve 44 is here constructed as a ball valve with a spherical valve body 48b and an acute-angled, conical valve seat, the valve spring 51b acting on the valve body 48b being formed by a separate helical spring or the like inserted in the valve case and/or is inserted between the valve body 48b and the outlet 45b in a valve case. Thus, the valve 44b is closed if a slight overpressure prevails within the container space 3b. The body 33b of the valve 31b is shown here with a much smaller diameter than in figs. 2 and 3.

According to fig. 5 the insides of one to all the vessel walls 4c to 6c and the neck 8c and therefore the discharge zone or opening 7c are wholly or partly provided with a thin coating or cover or lining 53, which engages in unfixed or is adhesively fixed partly or wholly to the particular inside and forms an inner container 53, as described relative to the compensating container 15, whose wall associated with the particular vessel wall is made from a thin, bending-slack plastic sheet, which in the substantially fold-free, smoothed position is reinforced by the associated vessel wall and so at least when the container space 3c is filled is also positionally secured under the fluid pressure.

Walls 54 to 58, namely the jacket wall 54, the ring-disk-like or frustum-shaped bottom and cover walls 55, 56 connected thereto, a portion 57 of the jacket wall 54 directly connected to the wall 55 and narrowed roughly by the

thickness of the vessel wall 4c, a neck portion emanating from and narrowed with respect to the cover wall 56 and an outer or ring-shaped front portion 59 located outside the container space 3c cover substantially completely the associated vessel wall or the outer front face of the neck 8c or the neck flange 52c. Adjacent walls pass in one-piece and cross-sectionally over an also substantially full-surface engaging roundness 60 with a constant wall thickness. The radius of curvature of the roundnesses 60 is larger, e.g. two to five times larger than the thickness of the vessel walls.

The lining 53 can be formed from a film hose blank inserted in the vessel body 2c or traversing the same in the opening 7c, 27c by applying an overpressure in the interior, evacuating the space area between the vessel walls and the lining walls and/or an increased temperature accompanied by permanent wall stretching and widening directly on said insides or the front side of the neck 8c, so that the vessel body 2c forms the mould and the lining 53 a precise image of the associated faces of the vessel body 2c without any gaps. The vessel body 2c can be completely shaped or simultaneously shaped in the described manner against a mould determining its external shape, the increased temperature bringing about the necessary adhesion between the walls. However, the lining 53 can also be partly or completely preshaped in a separate, multiply reusable mould, cooled or removed and then inserted in the vessel body 2c by means of one of the openings 7c, 27c.

The compensating container 15c essentially has the shape and size described relative to the inner container 53, so that in the substantially tension-free, completely widened state can so engage on the outer boundary of the container space 3c formed by the inner container 53 in the way which ha been described with respect to the engagement of the inner container 53 on the vessel body 2c. However, during manufacture or assembly the reception container 15c is initially located outside the vessel body 2c in the axis thereof and as an extension on the bottom wall 5c, the container 15c being connected by means of its jacket neck 17c to the inside of the vessel wall 5c and consequently the mounting support 18c is formed. In this outside position the container 15c invertable through the interior of the neck 17c is so turned with respect to its functional position that the function insides 61 of its walls, including the neck 17c are located on its outside and its function outsides 62 on its

inside. The walls of the container 15c outside the vessel body 2c are substantially tightly closed, so that its interior only communicates with the container space 3c and in the case of a sterile or dust-free action on the container space 3c its side 62 subsequently coming into contact with the medium can be kept clean and sterile.

The arrangement, construction and connection of the walls of the container 15c correspond to what has been described with respect to the walls 54 to 58 of the inner container 53, the constriction 57 not being shown here, but can be provided. The container 15c has at its associated end a hollow projection 63 emanating from its cover wall and which is also constructed in one piece from a film with the remaining walls and in the extension of the vessel wall 6c can completely or up to a discharge unit engaging in the neck interior, can fill the interior of the neck 8c, 58. This permits a substantially complete emptying of the medium in the container space 3c by a pressure which conveys the medium upwards.

The container 15c can be produced by the method described relative to the inner container 53 and can therefore be produced in the outside position or together with the inner container 53, the same pressure being built up in both containers 15c, 53, because they surround a common space, which is tightly closed except for the opening 7c used for pressure supply purposes.

It is particularly appropriate if the two containers 15c, 53 are partly or completely produced in one piece or from the same material, which can partly or completely differ from that of the vessel body 2c. The substantially cylindrical jacket neck 17c is connected in one piece and via ring-like joint zones directly to the radially inner boundaries of the bottom of the container 15c and the bottom wall 55 of the container 53, the length of the neck 17c being many times, e.g. five to ten times smaller than its width. All the remaining transition roundnesses between the walls of the container 15c also form circular articulation zones permitting an inversion. The partly or completely shaped container 15c is, after its production, self-inverted from its end remote from the containers 2c, 53 and thereby transferred substantially completely into the container space 3c. However, the container 15c can initially be folded in the outside position to a volume which roughly

corresponds to the material volume of its walls or max two to three times the same and is only then transferred through the opening 27c on the inside of the vessel wall 55. In both cases the folding or transfer is possible by evacuating the container space 3c or the inner space of the outer container 15c from the opening 7c. If the container 15c during the transfer into the container space 3c is stretched or inverted, through evacuation from the outside of the vessel wall 5c, namely through the turned neck 17c it can be folded in closely engaging manner onto the bottom 5c, 55.

When the container 15c is entirely located in the container space 3c, the opening 27c can be closed with a cap-like cover 65, whose front wall engages on the outside of the vessel wall 5c and whose jacket wall engages on the outside of the constriction 57 of the vessel wall 4c in such a way that its outer circumference is aligned with that of the vessel wall 4c and passes approximately continuously into it. The cover 65 can carry the control valve for filling the compensating container 15c and forms the base 37c.

In another advantageous procedure the container 15c inverted or transferred into the container space 3c e.g. by the action of an internal pressure from the neck 17c of the opening 27c can be so engaged in full-surface manner on the insides of the container space 3c that between it and the insides there are no longer any cavities or air, etc. The use medium can then be filled in bubble-free manner from the opening 7c by a gradient, overpressure and/or underpressure delivery between said walls, the container 15c with the increasing filling volume synchronously gives way or undergoes size reduction by folding. The medium in the compensating container 15c can then escape outwards against an overpressure limiter through the neck 17c, said medium being compressible or gaseous. In the case of a medium or pressure-tight connection of the filling duct to the opening 7c the conveying or delivery of the medium can also take place by suction in the container space 3c, namely e.g. by evacuating the container 15c from the neck 17c. In any case the container 15c is initially folded with the filling, so that any folding-caused cavities on its outside and completely surrounded by it cannot contain any extraneous medium and instead only the filling medium.

No separate seals are required due to the described construction. The sealing

of the medium space in the vicinity of the walls 5c, 55 or the opening 27c takes place through the transition in the area 19c or the connection of the neck 17c to the bottom walls 5c, 55. The sealing of a cover or a discharge unit in the vicinity of the opening 7c takes place through the front ring 59, which has corresponding sealing characteristics.

According to figs. ' and 7 the compensating container 15d can also be constructed in one piece with one to all the vessel walls 4d to 6d, 8d, 52d or the areas thereof forming the inside of the container space 3d and/or the outside of the vessel body 2d. The neck 17d here passes in one piece into the vessel wall 5d on its radially inner boundary, which forms a cross-sectionally roughly axially angled and exclusively outwardly projecting, ring-like closed step 66, which can be rounded in approximately pitch circular or quadrantal manner and in the vicinity of this transition 67 decreases approximately continuously or in step free manner from the wall thickness of the wall 5d to the much smaller wall thickness of the container 15d or the neck 17d. The last mentioned smallest wall thickness can be at a distance from the outside of said wall 5d corresponding to one to three times the thickness of said wall 5d or can be reached between the planes of the two sides of the wall 5d. Roughly in the centre between its ends the neck 17d forms an inversion articulation zone, about which it can be folded inwards in double layer form, so that its two layers of in part different thickness form at the end of a step 66 a ring fold-like inversion edge or rim 68. The latter and the step 66 are then completely covered to the outside by the cover 65d, which has the insertion opening for filling the compensating container 5d in the jacket and/or in its front wall, which can be spaced from the bottom wall 5d, accompanied by the formation of a circular cavity.

The through, one-piece subassembly according to fig. 6 can e.g. be produced from a blank 64 or a one-piece preblank according to fig. 7, which is here elongated, cup-shaped or sleeve-like as an injection plastic moulding. The blank 64 has in prefabricated or finished form the neck flange 52d' or the neck 8d' bounding the openign 7d' and the zones 6d', 4d', 5d' for the vessel walls 6d, 4d, 5d connected thereto, said wall zones 4d' to 6d' having approximarely the same thickness, a reduced thickness compared with the finished walls 4d to 6d and/or approximately the same inside or outside width and pass

in step-free manner into one another. The bottom 15d' of the blank 64 is connected in cross-sectionally continuous manner to the wall zone 5d' and is outwardly constructed in dome or hemispherical cup-shaped manner and can have a smaller wall thickness than the zone 5d' to 6d', 8d' and advantageously passes continuously into the wall thickness of the zone 5d'.

Following manufacture, the blank 64 without complete solidification cooling or in the plastically deformable state from manufacture, can be transferred into a blow mould, which has the characteristics described relative to fig. 5. Optionally accompanied by a further supply of heat and pressure, the zones 4d' to 8d', 52d', accompanied by stretching and plastic deformation, are transferred into the final container shape of fig. 6d, said zones being almost exclusively axially stretched and an inner mould is not required. Zone 15d' is also located in a cavity of the outer mould corresponding to the inverted shape of the container 15d, said zone 15d' being so strongly axially and radially plastically stretched by the internal pressure and without an inner mould that the very thin film wall in the container 15d is formed and is connected by means of the transition 67 to the vessel body 2d. Thus, both containers 2d, 15d are simultaneously produced in a single operation, after which by means of the duct supplying the pressure medium a return suction flow can be produced, through which the container 15d shaped in the outer layer can be sucked through the opening 27d into the container space 3d accompanied by folding and the formation of the inversion edge 68. This process can also take place in a separate operation or after removing the subassembly from the mould or after cooling or solidification.

As soon as the discharge unit to be inserted in the neck 8d, such as a thrust piston pump, has a casing step projecting freely into the container space 3d, the container 15d can also have a corresponding, pocket-like depressed receptacle 69, which receives said casing step in substantially gap-free manner. The receptacle 69 emanates in one piece from the circular front wall of the projection 63d and can either, in accordance with fig. 6, be invertable for transfer into the function position or instead of this can project outwards in the shaped state into the interior of the container 15d located in the outer position or layer, so that no inversion is needed for transfer into the function position.

The container can also be partly or completely produced in an extrusion or blowing process in such a way that as the medium present or pressure medium use is made of carbon monoxide or a gas with similar properties. The containers 2e, 53e are jointly produced from a double-walled, tubular blank and simultaneously the container 15e is produced in the outer position or layer. The blank open at both ends and having approximately constant cross-sections over its length can have a width corresponding to the pipe connections 21e, 22e, which in the finished vessel body 2e only project outwards from the remote outsides of the walsl 5e, 6e and are approximately equiaxially positioned in the central axis 70 of the vessel body 2e. On the inner circumference of the connection 22e is fixed the neck 17e of the container 15e or the associated blank, whilst correspondingly on the other connection 21e is fixed the other end of the blank or the neck 58e. This connection 21e can have an opening 71 for the introduction of the shape-giving pressure medium, for filling the container space 3e and/or for fixing a discharge mechanism for the medium or a removable closure. For this purpose, it is also possible to have in laterally displaced manner alongside the connection 22e, a neck 8e projecting outwards over the wall 6e and emanating from the latter and which serves to form the opening 7e, also being lined by the container 53e up to its end.

Following shaping or moulding said lining part closes the opening 7e with a front wall, but it can easily be opened by cutting, perforating, etc. On the finished vessel body 2e the equally wide connections 21e, 22e are much narrower than the vessel wall 4e. If the opening 7e is used for medium discharge, the compensating container 15e transferred from its outer position into the container space 3e is fixed substantially only in the vicinity of the cover wall 6e, so that it expands towards the bottom wall 5e with increasing emptying of the use medium. The wall of the container 15e or 53e associated with the bottom wall 5e can be welded to the latter or said container can hang freely against the bottom 5e not fixed by the cover wall 6e. On the outside the wall 5e or 6e is appropriately covered by a cover of the indicated type and which also covers the associated connecting piece or pieces. The compensating passage 30e passing through the neck 17e is here on the same side of the container space 3e as the opening 7e and immediately alongside the same.

According to fig. 9 the necks 17f, 58f of the substantially tubular compensa-

sating container 15f are so fixed to the connections 21f, 22f by fastenings 23f, that the main portion of the container 15f between them is located in unfixed manner in the container space 3f, but is tightly closed to the outside in the vicinity of the connections. The neck 8f-filling projection 63f is indicated in dot-dash line form in its function position and here no separate inner lining has to be provided. By evacuating the reception space 39f the compensating container 15f is transferred into its function starting position shown partly in continuous line form and partly in dot-dash line form in fig. 9, in which the projection 63f is also closely folded up. The container 15f is then located in the manner of an elongated strand around which the medium completely flows between the walls 5f, 6f in contact-free manner in the container space 3f. From this state the container 15f can expand radially and axially in all directions until it engages in gap-free manner on the vessel walls.

The cover 50f closes the opening 27f with a step 49f and is traversed by the outlet opening 45f of the discharge mechanism 9f inserted in the neck 8f, so that it does not have to be removed for discharge purposes. The discharge mechanism 9f can contain one of the aforementioned outlet valves. The fastening 23h on the associated wall can also take place according to fig. 10 in that the associated end 58h of at least one of the inner containers, e.g. the container 15h is embedded in the wall 5h in such a closely surrounded manner in the folded state that it is connected thereto accompanied by reciprocal welding and closure of the associated opening of the container 15h. The wall 5h then forms an opening 71h substantially completely filled by the embedded portion 58h and can partly or completely traverse the wall 5h.

According to fig. 11 control means are provided in order to e.g. so introduce the medium located in the compensating container 15k as a function or action medium that it influences by pressurizing, discharge or the like the discharge behaviour or characteristics of the discharge device 1k. For example the air or some other medium in the container 15k can be supplied directly upstream and/or downstream of the outlet opening 45k to the medium from the space area 12k and so finely atomizes the latter outside the device 1k, transfers it into a foamed state or in the case of an unatomized, flowing, concentrated beam discharge can be traversed by the supplied medium. For a volume-compensating

self-filling suction takes place into the container 15k through the inlet 36 and via the valve 31k. An outlet duct 72, which is separate or branched from the intake duct leads in the cover 50k to the discharge nozzle, e.g. into a twisting device between a nozzle cap and a nozzle core inserted therein. In said outlet duct 72 is provided a pressure-dependently operating outlet valve 73, which opens in the case of an overpressure in the container 15k, whilst the valve 31k closes. On compressing the vessel wall 4k the container 15k is pressurizable by means of the incompressible medium in the space area 12k, if it is not in direct contact with the vessel walls of the vessel body 2k. Thus, the compressible medium in the container 15k is pressurized and simultaneously with the supply of the use medium to the discharge nozzle is supplied to the latter via the outlet duct 72 and is mixed with the use medium. Following the release of the pump 40k the valves 44k, 73 close and air is again sucked from the outside into the container 15k by means of the valve 31k.

The neck 17k of the container 15k is here mounted on a connecting piece of the mounting support member 21k projecting through the vessel wall 6k into the container space 3k and which engages with an outwardly projecting end of said connecting piece into the cover 50k. The cover 50k contains the valves 31k, 73, the inlet 36k and the outlet duct 72 as well as the discharge nozzle, it then forms a stop for the opened valve body 48k. The mounting support 18k and the valve 44k are both laterally displaced with respect to the axis 70k, but the mounting support body 21k can also be located in said axis 70k, together with the container 15k which can be fitted by inversion. Moreover, in the inlet and/or outlet duct of the container 15k can be provided at least one screen or filter, e.g. an ultrafine or sterile filter. If at least one or all the valves for the container 15k are omitted, said control can also take place by a corresponding reciprocal matching of the inlet and outlet cross-sections. It is also conceivable to suck into the container 15k through at least one of optionally several outlet openings 45k and clean the same with respect to medium constituents. The wall 5k can be completely free from openings and constructed substantially in one piece.

According to fig. 12 two independently discharge-functional individual discharge units with separate vessel bodies 2m and pumps 40m are combined into a unit, which can be operated jointly and/or separately, so that two separately

media, such as toothpaste, can be simultaneously or successively discharged. The pump 40m is inserted in the associated neck 8m in approximately completely filling manner and projects into the container space 3m in contact-free manner with a casing step, which forms at its free or tubular constricted end the inlet opening for the thrust piston pump 40m and can be received in a receptacle corresponding to the receptacle 69 of fig. 6. Each pump 40m has outside the pump casing and the vessel 2m on a pump plunger an actuating head with the associated outlet opening 45m, both actuating heads being jointly surrounded with the cover 50m and operable by means of plug connections, because the latter is axially displaceable with respect to the vessels 2m engaging with one another by their walls 4m.

The neck 17m of the container 15m engages under the ring disk-like fold in double layer manner in a ring gap 23m on the inner circumference of the connecting piece 22m, so that in simple manner the mounting support 18m is formed. The ring groove 23m can be formed by compression or corresponding double layer folding of the jacket of the connecting piece 22m and can be connected in welding-like manner with the radially outwardly projecting ring part of the neck 17m. If during the pump stroke small medium quantities pass out of the inlet of the pump 40m into the container space 3m, the container 15m can be constricted by emptying by means of the valve-free inlet 36m. Then in the case of a self-sucking return stroke of the pump 40m and suction of the medium from the container space 3m, corresponding to the action of a climbing member, the container 15m can follow in widening manner and air can be sucked via the inlet 36m.

The discharge device according to the invention operates in any position, e.g. horizontally, upside down or the normal upright position. Advantageously it also allows a preservative-free product storage of the use medium. The outlet valve can also be constructed as a dosing valve, so that e.g. through the valve stroke the discharge medium quantity can be precisely defined for each actuation.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A dispenser for discharging media comprising:

at least two containers including an outer container and an inner container at least partly located within said outer container, said inner container including a foil wall made from a slack and foldable foil, said foil wall supporting against an inside face of said outer container when said foil wall is unfolded and reaches a maximum fully widened state, wherein in said fully widened state said foil wall is substantially free of tensile stresses.

2. The dispenser according to claim 1, wherein when in said fully widened state said foil wall is substantially free of folds and substantially entirely supports against said inside face.

3. The dispenser according to claim 1 or 2, wherein said inner container is a bag made from said slack and foldable foil, said bag connecting to a foil lining covering and supporting against a circumferential face section of said inside face as a precise image of said face section, said bag invertedly connecting to said foil lining via an invertion rim and being made in one part with said foil lining.

4. The dispenser according to any one of the preceding claims, wherein said inner container has a free end, said foil wall including a foil protrusion at said free end.

5. The dispenser according to any one of the preceding claims, wherein said inner container includes a fixing section fixedly held within a vessel wall of said outer container, said vessel wall embedding said fixing section in one part.

6. The dispenser according to claim 5, wherein said vessel wall defines a reception gap substantially entirely filled by said fixing section.

7. The dispenser according to claim 5 or 6, wherein said fixing section includes two superimposed foil layers made from said foldable foil.

8. The dispenser according to any one of claims 5 to 7, wherein said vessel wall includes two superimposed wall layers, said fixing section being embedded between said wall layers.

9. The dispenser according to any one of claims 5 to 8, wherein said vessel wall and said fixing section bound a vessel aperture, said reception gap being annular.

10. The dispenser according to any one of the preceding claims, wherein said inner container is fixed to a bottom wall of said outer container, a cover separate from said outer container and from said inner container covering said bottom wall.

11. The dispenser according to any one of the preceding claims, wherein a pump unit is inserted inside said outer container and projects into a container chamber commonly bounded by said outer container and said inner container, inside said container chamber said pump unit including a pump inlet opening.

12. The dispenser according to any one of the preceding claims, wherein said inner container is communicatingly connected to environmental atmosphere via a connection that is free of valve means.

13. The dispenser according to any one of the preceding claims, wherein said outer container and said inner container are made from a same material.

14. The dispenser according to any one of the preceding claims, wherein said outer container and said inner container include a connection transition made in one part with both said outer container and said inner container, said outer container having an average wall thickness of at least five to ten times an average wall thickness of said inner container.

15. The dispenser according to any one of the preceding claims, wherein said inner container is fixedly connected to said outer container at two mutually spaced fixing locations, at least one of said fixing locations being provided by a boundary of a passage duct of at least

one of said containers, at said fixing location said inner container including an adhesive lining of said outer container.

16. A method for manufacturing a dispenser according to any of claims 1 to 15, whereby an inner container is made to include walls consisting from a slack bendable foil and whereby an outer container is made to receive said inner container, wherein said outer container and said inner container are shaped while being directly interconnected.

17. The method according to claim 16, wherein said outer container and said inner container are commonly molded in a single molding step.

18. The method according to claim 16 or 17, wherein said inner container is shaped against an inside face of said outer container while simultaneously widening and stretching at least one of said containers.

Dated this 8th day of January 1998

ING. ERICH PFEIFFER GMBH
By its Patent Attorneys
DAVIES COLLISON CAVE

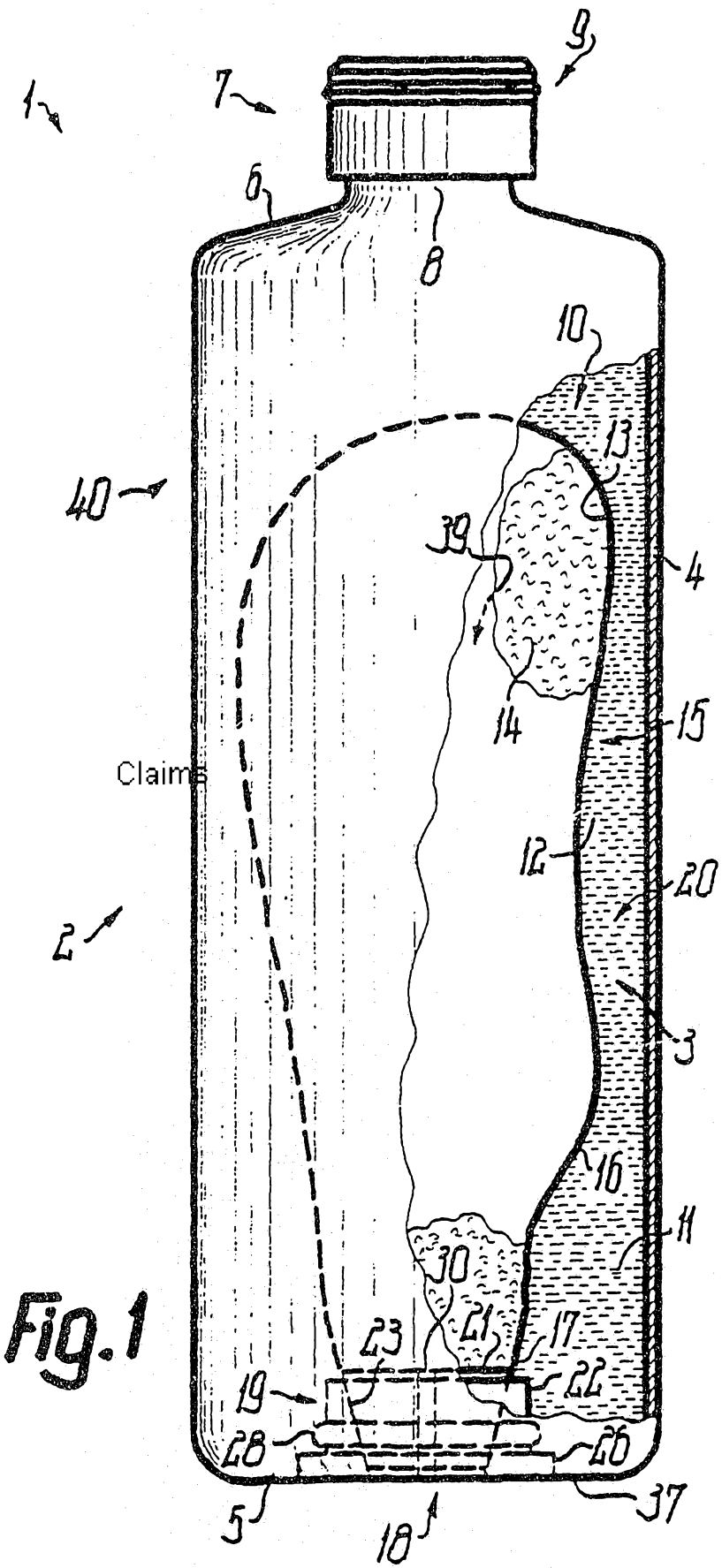


Fig. 1

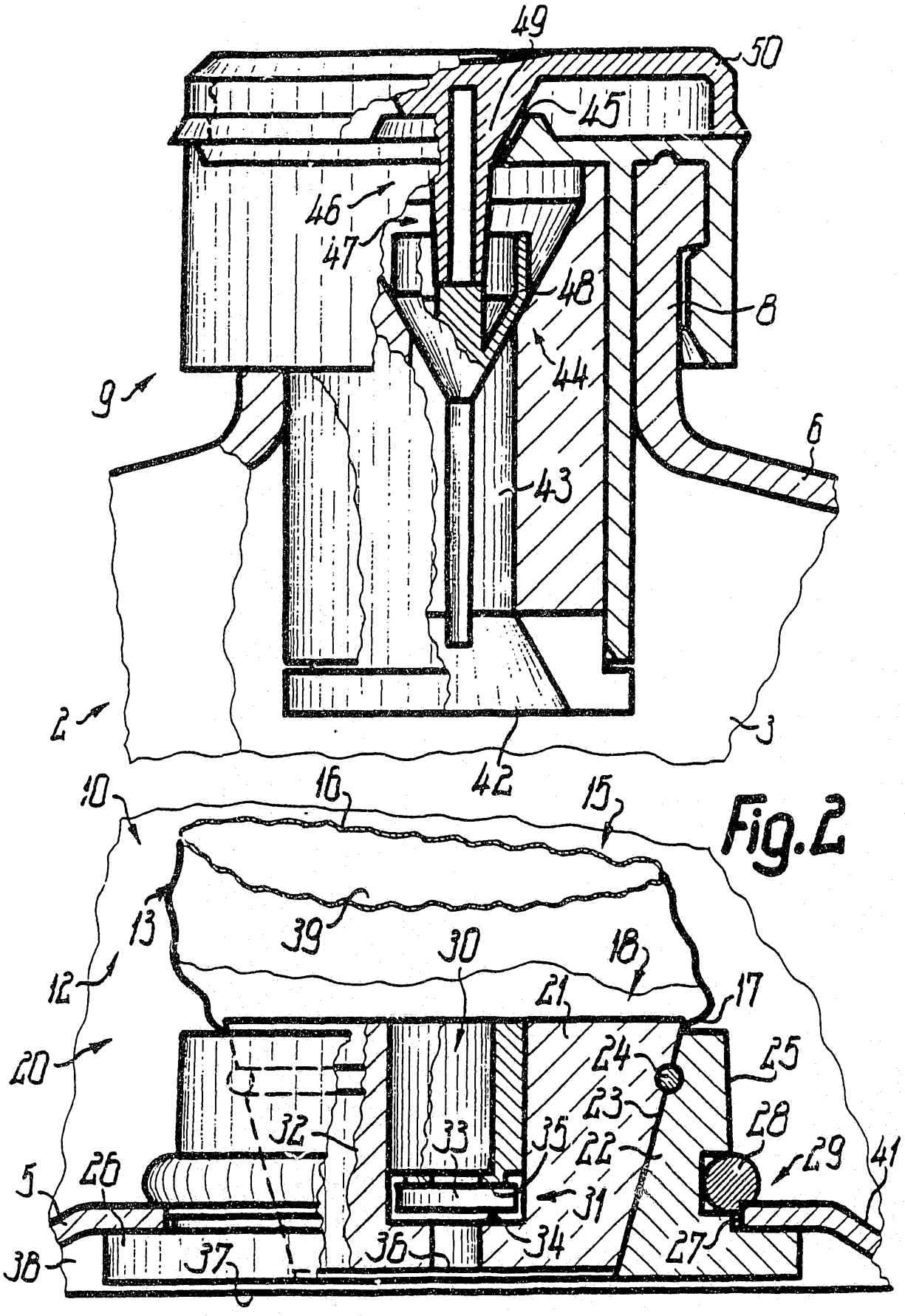

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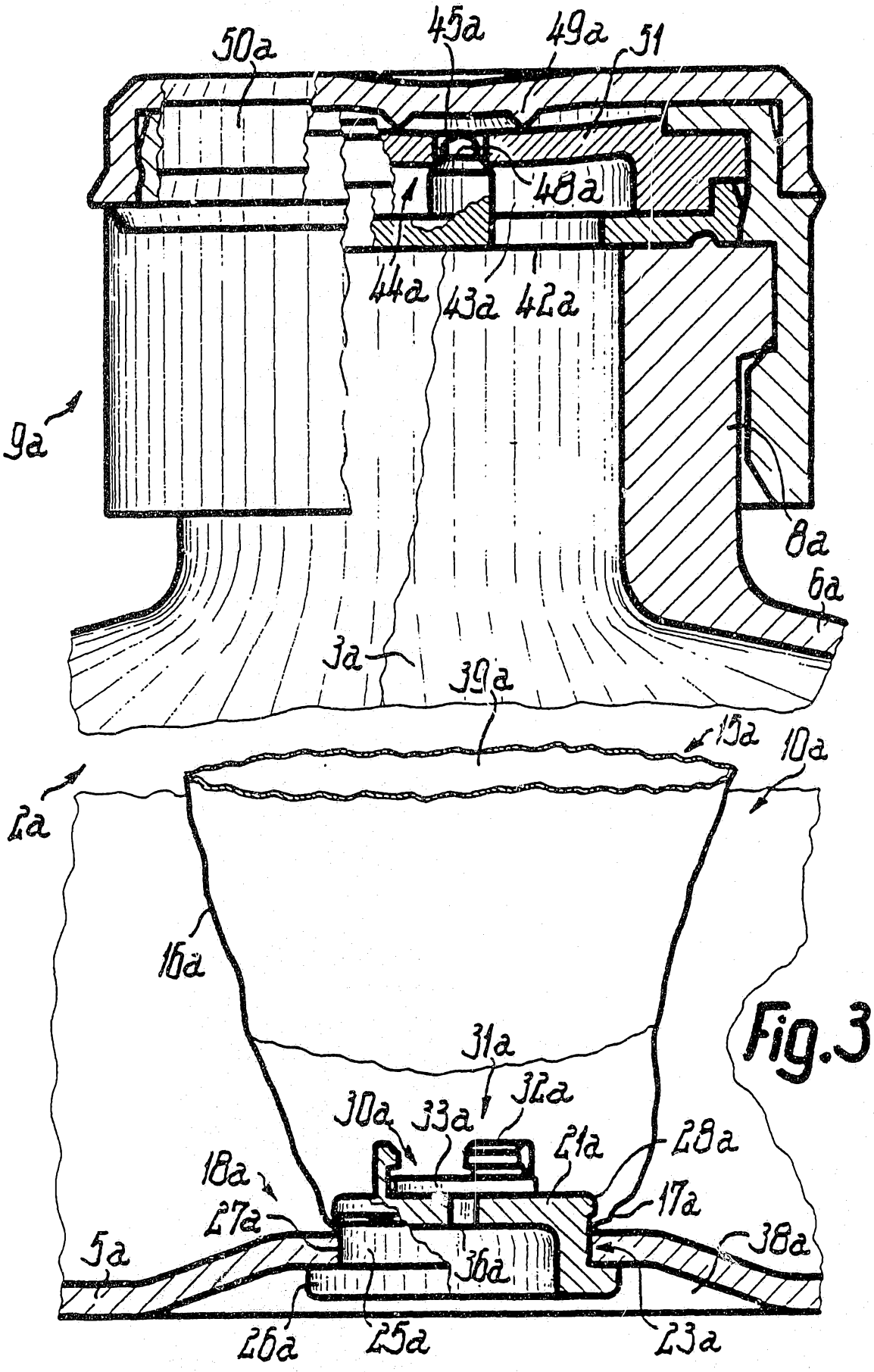
Fig. 2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16a
31a
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17a
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38a
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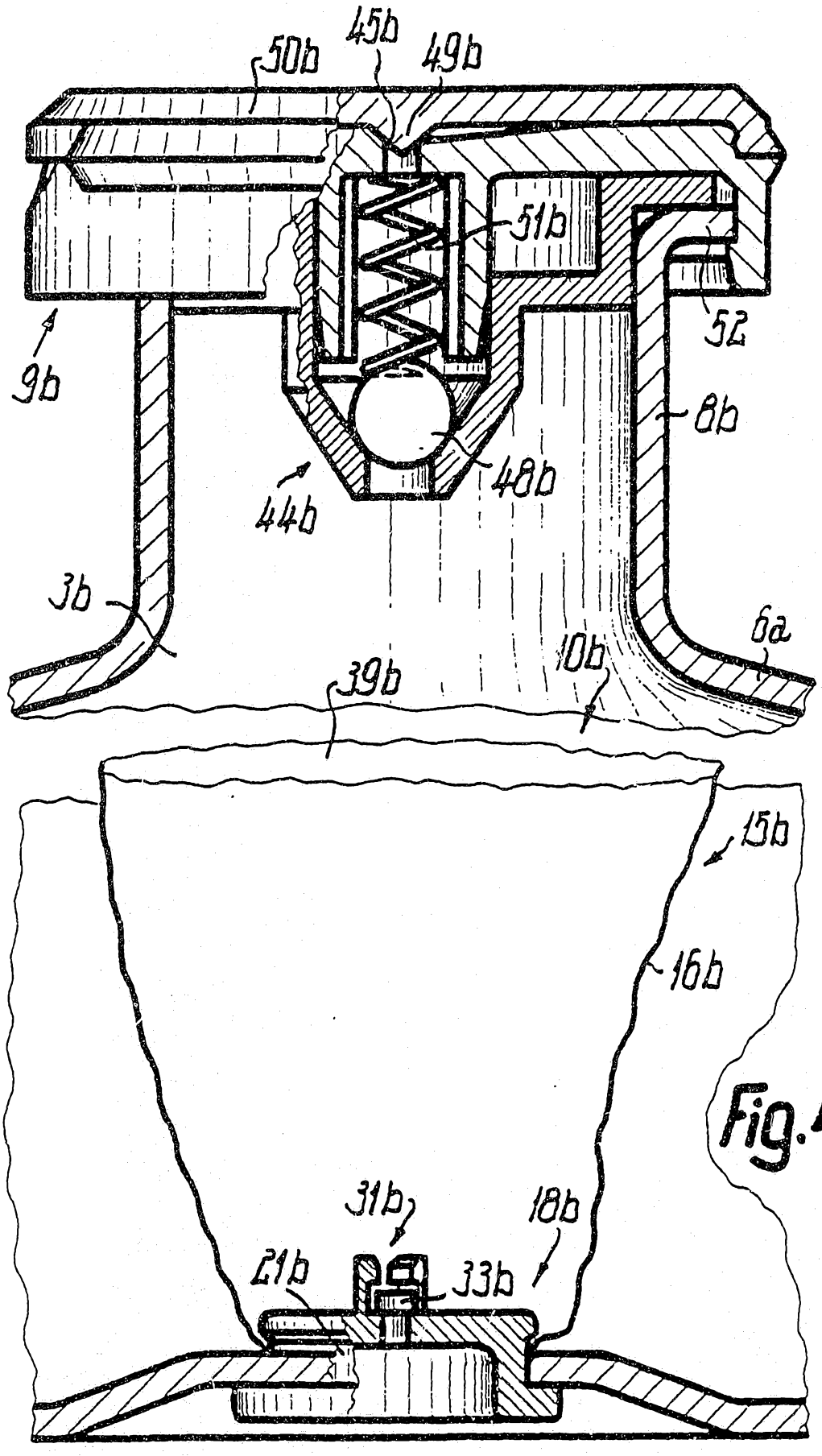
26a
25a
23a

Fig.3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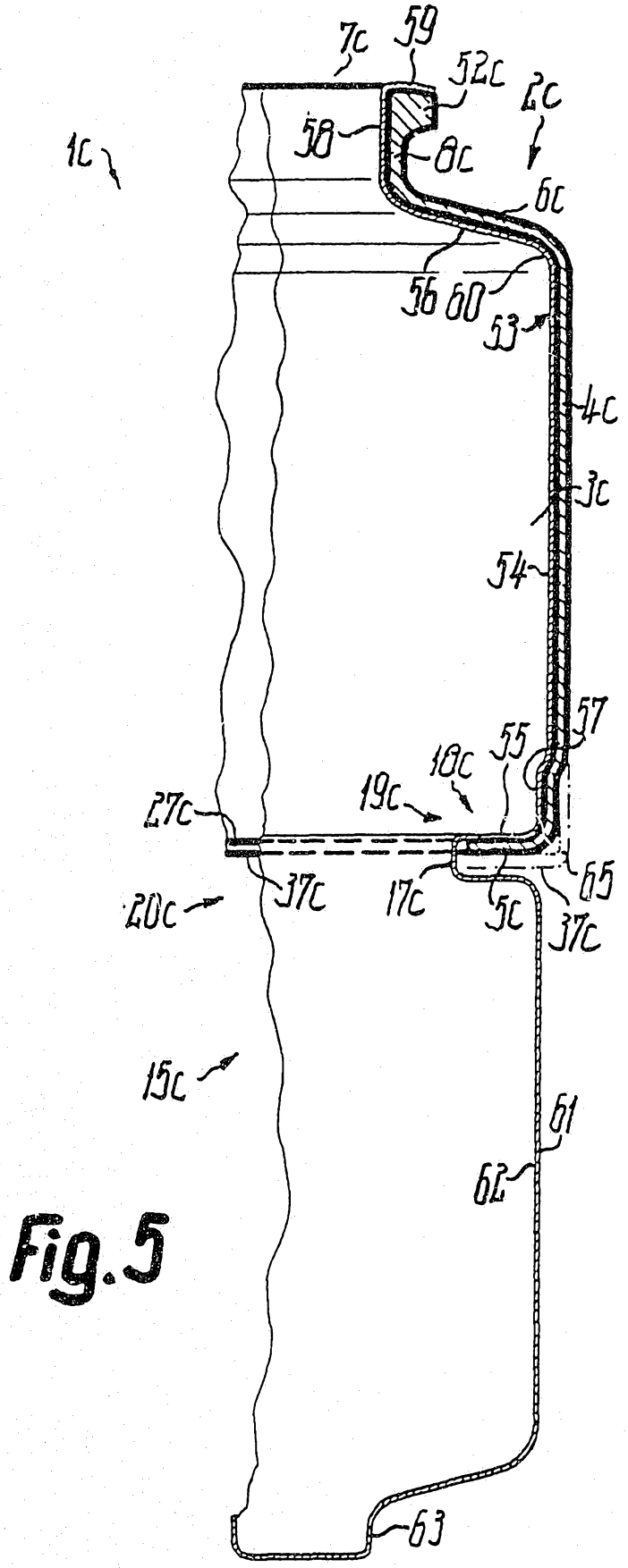
18b
21b
33b

Fig.4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59
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8c
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6c
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4c
3c
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19c
27c
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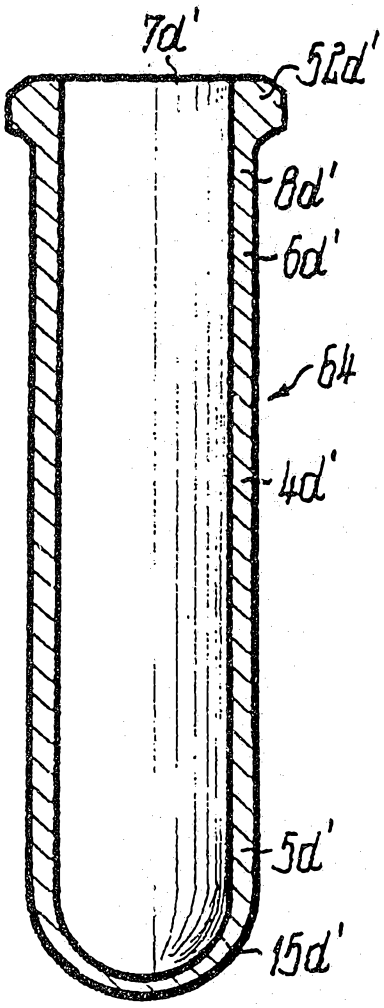
37c
17c
5c
37c
20c
15c
61
62
63

Fig.5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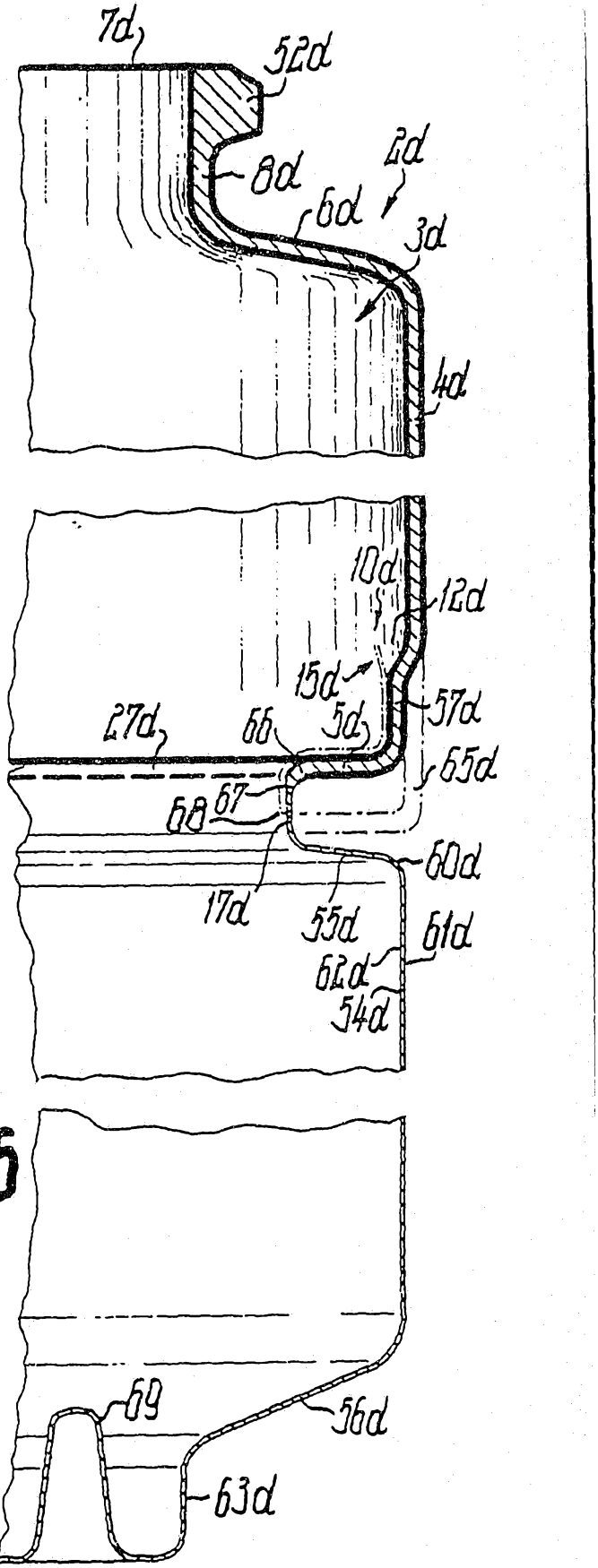
8d'
6d'
64
4d'
5d'
15d'

Fig. 7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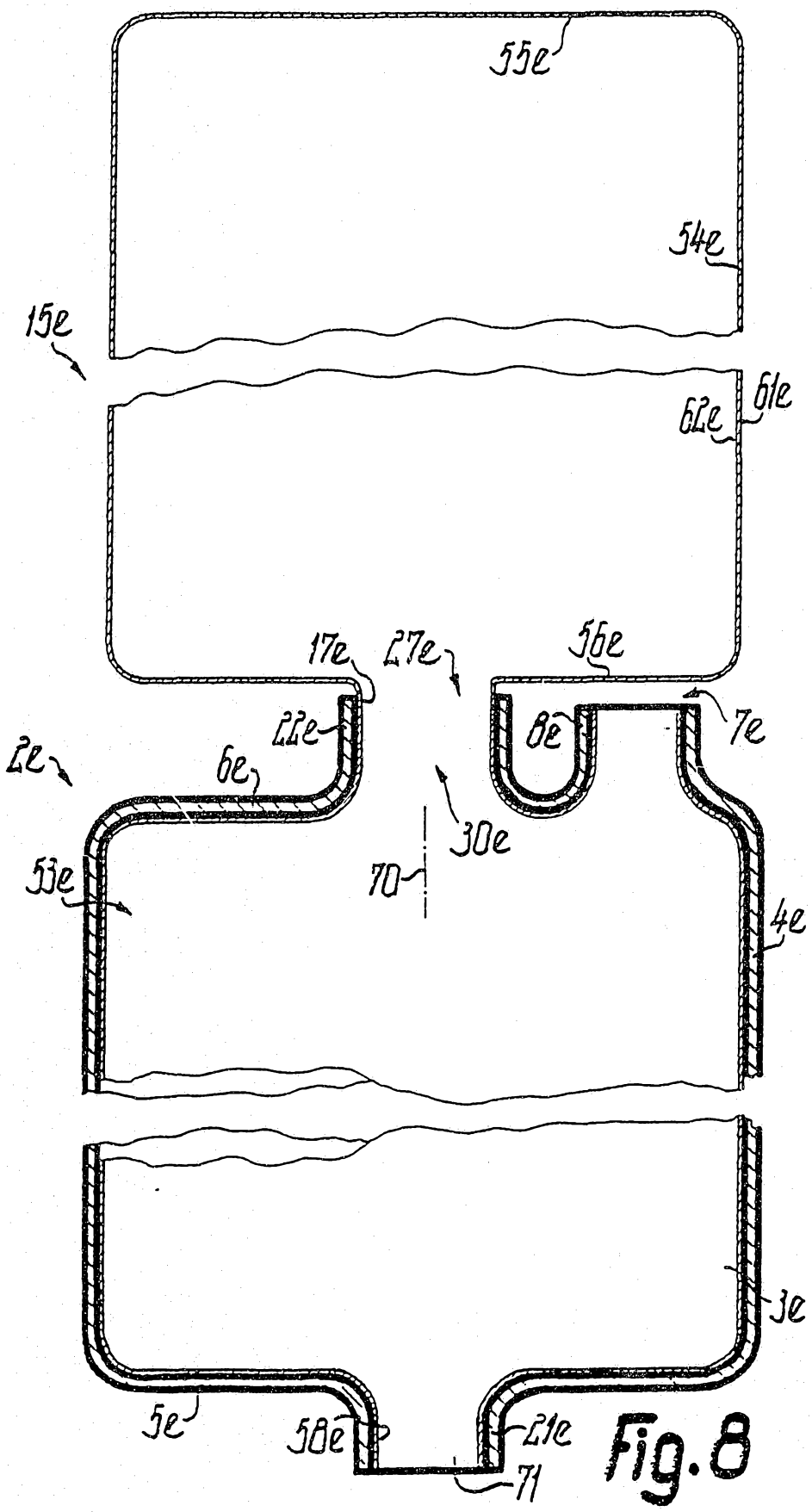
60d
17d
55d
61d
62d
54d
69
56d
63d

Fig. 6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4e
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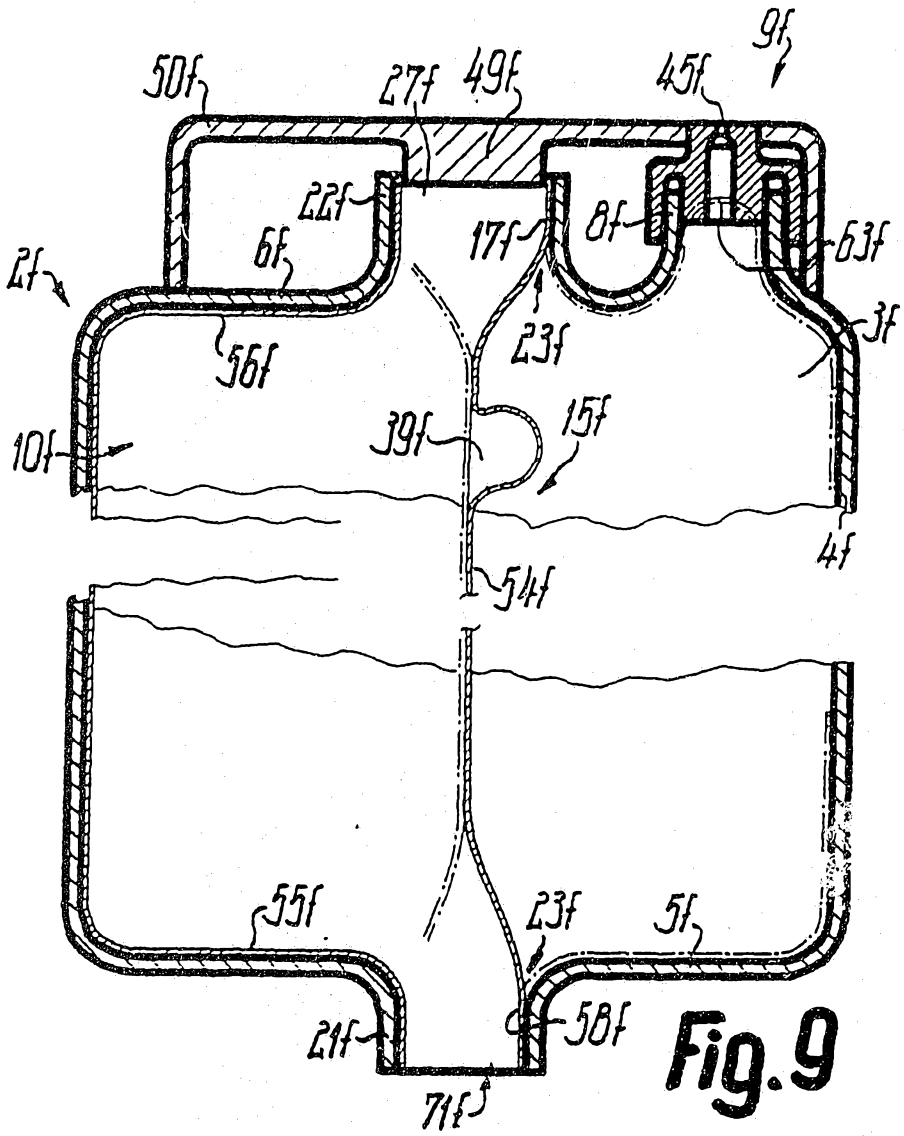
58e
21e
71

Fig. 8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2f
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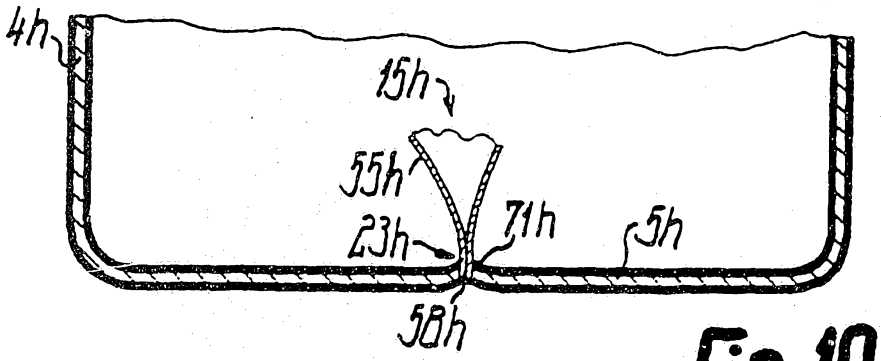
55f
23f
5f
21f
58f
71f

Fig.9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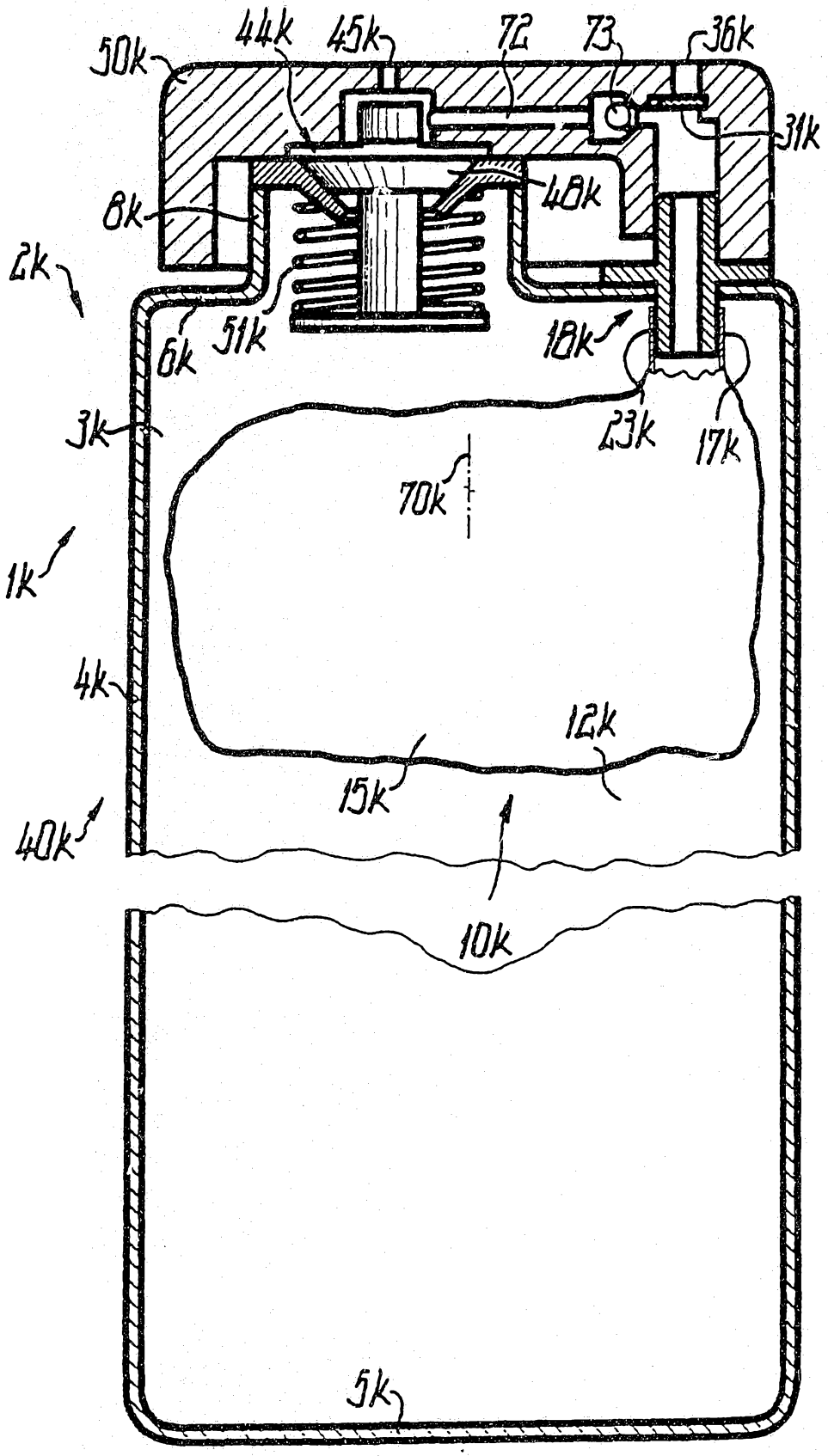
23h
71h
5h
58h

Fig.10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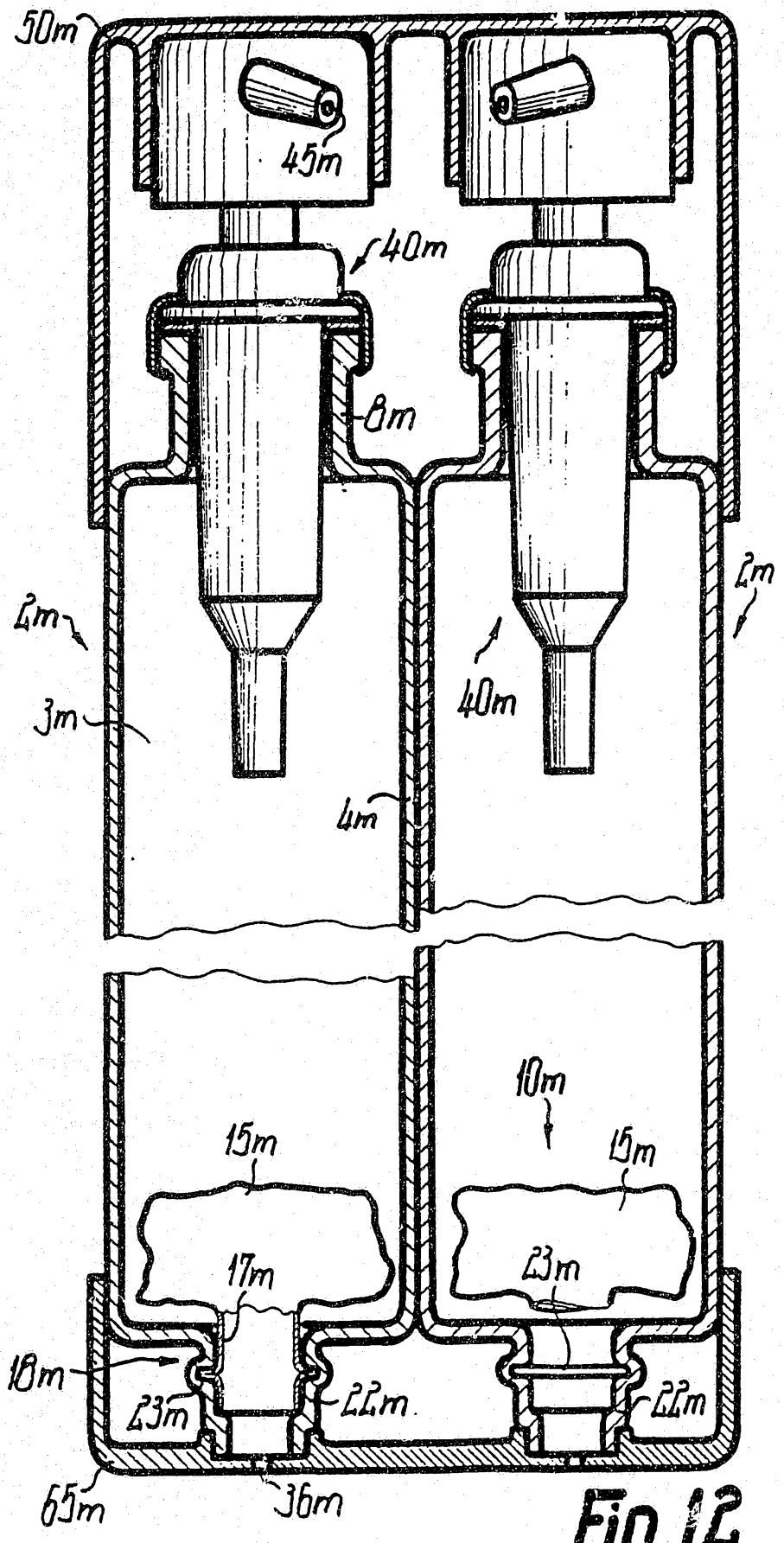
10k
5k

Fig.11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17m
23m
18m
23m
22m
22m
65m
36m

Fig.12

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP,A,0 011 394 (CONTAINAIRE INC.) 28 May 1980 see page 8, line 15 - page 19, line 5; figures 1-12	1-5, 10-13 15,16
X A	WO,A,91 09682 (WELLA A.G.) 11 July 1991 see page 8, line 19 - page 9, line 10; figures 1-6	1-5,10, 13 18
A	US,A,2 728 494 (HOBSCN) 27 December 1955 see column 2, line 45 - line 61; figures 1-6	8
A	FR,A,1 316 596 (BOUET) 26 December 1962 see column 3; figures 1-2	1,11,17, 18
A	DE,U,86 02 150 (ZANKER) 3 July 1986 see page 5, line 24 - page 6, line 4; figures 1-6	14,16

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/EP 94/01343

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
FR-A-1314002		NONE		
US-A-4154366	15-05-79	NONE		
FR-A-1530565		NONE		
EP-A-0011394	28-05-80	US-A-	4239132	16-12-80
		CA-A-	1104532	07-07-81
		JP-A-	55071280	29-05-80
		US-A-	4420100	13-12-83
		CA-A-	1118730	23-02-82
WO-A-9109682	11-07-91	DE-U-	9017062	25-04-91
		EP-A,B	0460154	11-12-91
		ES-T-	2046041	16-01-94
		JP-T-	4504531	13-08-92
US-A-2728494		NONE		
FR-A-1316596		NONE		
DE-U-8602150	22-05-86	NONE		

INTERNATIONALER RECHERCHENBERICHT

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PCT/EP 94/01343

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Recherchierter Mindestprüfstoff (Klassifikationssystem und Klassifikationssymbole)
IPK 5 B65D B05B

Recherchierte aber nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Gebiete fallen

Während der internationalen Recherche konsultierte elektronische Datenbank (Name der Datenbank und evtl. verwendete Suchbegriffe)

C. ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	FR,A,1 314 002 (BOUET) 26. November 1962	1-7, 10-13
A	siehe Spalte 4, Zeile 7 - Zeile 36; Abbildungen 1-3	19,21

X	US,A,4 154 366 (ACRES) 15. Mai 1979	1-6,10, 12,13
A	siehe Spalte 2, Zeile 6 - Zeile 40; Abbildungen 1-9	9,19,21

X	FR,A,1 530 565 (MUELLER) 20. Mai 1968	1-7,10, 12,13
A	siehe Spalte 4, Zeile 1 - Zeile 38; Abbildungen 1-3	9,19,21

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[X] Weitere Veröffentlichungen sind der Fortsetzung von Feld C zu entnehmen

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26. August 1994	- 5. 09. 94
Name und Postanschrift der Internationale Recherchenbehörde	**Bevollmächtigter Bediensteter**
Europäisches Patentamt, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax (+ 31-70) 340-3016	Vollering, J

Formblatt PCT/ISA/210 (Blatt 2) (Juli 1992)

C.(Fortsetzung) ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	EP,A,0 011 394 (CONTAINAIRE INC.) 28. Mai 1980	1-5, 10-13
A	siehe Seite 8, Zeile 15 - Seite 19, Zeile 5; Abbildungen 1-12	15,16
X	WO,A,91 09682 (WELLA A.G.) 11. Juli 1991	1-5,10, 13
A	siehe Seite 8, Zeile 19 - Seite 9, Zeile 10; Abbildungen 1-6	18
A	US,A,2 728 494 (HOBSON) 27. Dezember 1955 siehe Spalte 2, Zeile 45 - Zeile 61; Abbildungen 1-6	8
A	FR,A,1 316 596 (BOUET) 26. Dezember 1962 siehe Spalte 3; Abbildungen 1-2	1,11,17, 18
A	DE,U,86 02 150 (ZANKER) 3. Juli 1986 siehe Seite 5, Zeile 24 - Seite 6, Zeile 4; Abbildungen 1-6	14,16

INTERNATIONALER RECHERCHENBERICHT

Angaben zu Veröffentlichung die zur selben Patentfamilie gehören

Internationales Aktenzeichen
PCT/EP 94/01343

Im Recherchenbericht angeführtes Patentdokument	Datum der Veröffentlichung	Mitglied(er) der Patentfamilie		Datum der Veröffentlichung
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US-A-4154366	15-05-79	KEINE		
FR-A-1530565		KEINE		
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		CA-A-	1104532	07-07-81
		JP-A-	55071280	29-05-80
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WO-A-9109682	11-07-91	DE-U-	9017062	25-04-91
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US-A-2728494		KEINE		
FR-A-1316596		KEINE		
DE-U-8602150	22-05-86	KEINE		