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

(11) **EP 3 214 009 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
06.09.2017 Bulletin 2017/36

(21) Application number: **16158128.5**

(22) Date of filing: **01.03.2016**

(51) Int Cl.:
B65D 47/24 *(2006.01)* ***B65D 5/74*** *(2006.01)*
B65D 75/58 *(2006.01)* *B65D 50/06* *(2006.01)*

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(71) Applicant: **Kao Germany GmbH**
64297 Darmstadt (DE)

(72) Inventors:
- **Matsumoto, Shuhei**
  64297 Darmstadt (DE)
- **Lamboy, Peter**
  64297 Darmstadt (DE)
- **Römer, Frank**
  57413 Finnentrop (DE)
- **Wommelsdorf, Jan**
  57413 Finnentrop (DE)

(74) Representative: **Michalski Hüttermann & Partner Patentanwälte mbB**
Speditionstraße 21
40221 Düsseldorf (DE)

(54) **SPOUT FOR A REFILL CONTAINER AND METHOD FOR MANUFACTURING A SPOUT**

(57) A spout (10) for being connected to a refill container comprises connection means (12), which comprise a flow pipe (22) for communicating with the interior of the refill container, and a valve type closure (14) for opening and/or closing the flow pipe. An axially displaceable plug (18) seals the flow pipe (22) in a closing position and comprises at least one lateral connection opening (26) for communicating with an outlet orifice (28) of the closure (14) and the flow pipe (22) in an opening position. An operating assembly (42) connected to the closure and the plug allows axial blocking of the closure in the closing position and unblocking it by rotation, after which the closure (14) is reversibly axially moveable towards an opening position. Thus repeated opening and secure sealing of the spout is possible.

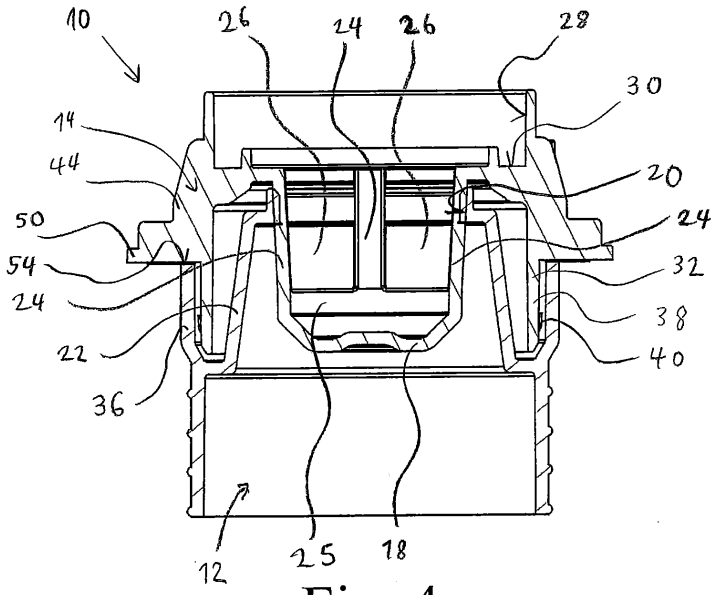


Fig. 4

EP 3 214 009 A1

Description

[0001] The invention relates to a spout for a refill container as well as a method for manufacturing a spout by means of which a fluid, particularly a fluid cosmetic product, can be poured into a bottle for dispensing this fluid.

[0002] From JP 2012-210953 A a spout for a refill bag is known comprising a hollow plug which can be inserted into an opening of a connection plate connected to the bag. The plug seal the opening in a closed position an can be pushed out of the opening by a linear movement along the axial direction of the opening towards the bag. A side opening of the plug communicates with the interior of the bag in this opened position, so that the content of bag may flow through the side opening into a hollow space of the plug. The content may flow further via the hollow space of the plug through the opening of the connection plate leaving the plug via an outlet into a bottle to be refilled by the content of the refill bag. In order to prevent that the spout is not opened unintentionally a securing ring is provided between radial protruding ribs of the plug and the connection plate blocking the movement of the plug relative to the connection plate. However, the securing ring can be easily lost after being released so that a secure sealing of the refill bag after use is not possible anymore. A multiple use of the refill bag for refilling a bottle multiple times is affected.

[0003] There is a permanent need for a facilitated multiple use of a refill container for refilling a bottle multiple times.

[0004] It is an object of the invention providing measures enabling a facilitated multiple use of a refill container for refilling a bottle multiple times.

[0005] The solution of this object is provided according to the invention by a spout according to the features of claim 1 as well as a method according to the features of claim 15. Preferred embodiments of the invention are given by the dependent claims and the following description, which can constitute each solely or in combination an aspect of the invention.

[0006] An aspect of the invention is directed to a spout for a refill container comprising a connection means for being connected to a refill container, wherein the connection means comprises a flow pipe for communicating with the interior of the refill container, and a closure for opening and/or closing the flow pipe, wherein the closure comprises a plug for sealing the flow pipe in a closing position, wherein the plug comprises at least one lateral connection opening for communicating with an outlet orifice of the closure and the flow pipe in an opening position, where the plug is axially displaced with respect to the closing position along the axial alignment of the flow pipe, wherein the closure is axially blocked in an axial direction towards the opening position in the closing position by means of an operating assembly, wherein the closure is axial moveable towards the opening position at a relative position displaced in peripheral direction to the closing position by a peripheral angle.

[0007] Due to the operating assembly the closure can be blocked in the closing position so that the spout stay closed for instance during transport or other situations where forces may be applied to the spout. When the spout should be opened intentionally, the blocking can be overcome by turning the closure so that the closure can be moved into its opening position. A turning of the closure leads to an axial blocking or removal of the axial blocking, while an axial displacement of the closure seals or unseals the flow pipe. As long as the closure is only turned with respect to the connection means, this means without an axial displacement, the flow pipe is still sealed by the plug and the spout stays closed. At least a part of the way the closure has to be moved from the closing position into the opening position is an axial displacement relative to the flow pipe of the connection means. This axial displacement can be performed by pressing the spout in an upside down alignment against a rim of an inlet opening of a bottle to be refilled. After refilling the bottle, the spout can be sealed again by moving the closure from the opening position into the closing position until the operating assembly blocks the axial movement of the closure again. Thus, even when the refill container, particularly a bag or pouch, to which the connection means of the spout is fixed, is not completely emptied, the remaining content can be easily sealed again. This allows using the refill container multiple times without the need of throwing away a not fully emptied refill container. This is beneficial for the environment and less costly for the consumer. Due to the axial blocking in the closing position an unintentionally opening of the spout may be prevented. It is even possible to recycle a refill container with such kind of a spout, if so after a cleaning, for filling the refill container with the same or a different content again. Further the operating assembly may be provided by the forming of the closure and the connection means only, particularly without a further separate or to be separated part of the spout, so that the multiple use of the spout is not affected, when a separated part is lost. Due to the operating assembly a multiple opening and secure sealing of the spout is realized so that a facilitated multiple use of a refill container for refilling a bottle multiple times is enabled.

[0008] The connection means may comprise a connection element, for instance a plate or plurality of plates, by means of which the connection means may be fixed to the refill container. Particularly the connection means may be connected to the refill container by gluing, welding, particularly ultrasonic welding, or the like. The refill container may be made from a flexible material and may be designed as a bag or pouch or the like. Particularly the connection means and/or the refill container may be made from a plastic material, preferably a thermoplastic material, so that the connection of the connection means with the refill container is facilitated. Particularly the refill container comprises only one opening completely closed by means of the spout so that a content of the refill container may only escape via the spout. The flow pipe may

be one-piece with the connection element. The interior of the refill bag may communicate with the environment via the flow pipe, wherein the flow pipe may be sealed and opened by means of the closure. Preferably the refill container is squeezable so that the emptying of the refill container is facilitated. Particularly the refill container is flexible like a bag or pouch so that the refill container can be compressed by hand discharging the content of the refill container.

[0009] The closure may be made from a plastic material, particularly a thermoplastic material. The plug of the closure may be inserted into a flow opening of the flow pipe of the connection means in the closing position. Particularly the plug may be pushed towards the refill container for opening the flow pipe. In the opening position at least one lateral connection opening of the plug opens a passage from the interior of the refill container to the flow pipe and or a channel of the closure. The flow pipe communicates with an outlet orifice of the closure, particularly via a channel provided in the closure, in the opening position, so that the content of the refill container may escape the spout, particularly into a bottle to be refilled. The plug may comprise a circumferential face, which can be brought into a sealing contact with the flow pipe. Particularly the circumferential face may be press fitted inserted into a part of the flow pipe, particularly into the flow opening of the flow pipe. The flow opening of the flow pipe may be provided at the narrowest flow cross-section of the flow pipe, so that the plug may positioned, particularly completely, inside the flow pipe and preferably not inside the refill container after an axial displacement of the plug relative to the flow pipe opening the spout and reaching its opening position. Particularly a sealing is provided between the closure and the connection means so that no content of the refill container may escape the spout via a gap between the closure and the connection means before and/or during a refilling of a bottle. The sealing may be provided as O-ring, sealing lip, radial sealing or the like.

[0010] Particularly the closure has to be turned up to a minimum peripheral angle until a blocking of the axial displacement relative to connection means ends. Preferably the closure has to be turned from the closing position into a position, where an axial displacement until the opening position is possible, by a peripheral angle α of $\alpha = 10°$ to $170°$, particularly $\alpha = 41° \pm 3$ or $\alpha = 56° \pm 3$ or $\alpha = 86° \pm 3°$. Particularly the closure has to be turned and afterwards axially displaced opening the spout, while the closure has to be axially displaced and afterwards turned blocking the closed spout. An unintentionally opening or closing of the spout can be prevented due to the combination of two different moving directions of the closure.

[0011] Preferably the operating assembly comprises a locking element for repeatable releasably connecting the closure with the connection means in the closing position, wherein the locking element is releasable and lockable by means of turning the closure relative to the flow pipe. When the spout should be opened intentionally, the locking, particularly the friction of a clamping force or a blocking positive fit by means of an elastic deformable part of the operating assembly, can be overcome so that the closure can be moved into its opening position. In addition, the operating assembly provides a haptic feedback when the closing position is reached. Hence, the consumer easily realizes after a refilling when the closing position is reached and a secure closing of the spout is present. The risk of a spilling of the content of the refill container by accident is reduced. The locking of the locking element may be provided by means of the closure and/or the connection means only. For example the operating assembly may be designed as snap connector, clip connector, catch mechanism or the like. The locking element may lock the closure with the connection means in the closing position, wherein a user may intentionally release the locking for moving the closure into the opening position. For releasing the locking of the locking element a latch, a lock bar or the like may be actuated. Particularly it is sufficient applying a predefined minimum force to the closure in a predefined circumferential direction for overcoming the locking. The locking element may provide a locking by means of friction and/or positive fit. Particularly only when the locking of the locking element is overcome, the closure can be axially displaced relative to the connection means. This means that first the closure has to be turned relative to the connection means for overcoming the locking of the locking element and afterwards, when the closure is turned up to a predefined peripheral angle, the closure may be axially displaced.

[0012] Particularly the operating assembly comprises a radially outwards protruding fin for abutting a stop in axial direction in the closing position. The fin provides a, particularly small, front face pointing in axial direction, which may abut the stop for blocking an axial displacement of the closure relative to the connection means. In addition, the fin provides a, particularly large, side face pointing in tangential direction, which may abut a peripheral stop of the operating assembly for blocking a turning along a peripheral direction. Preferably the fin is adapted for being releasably locked in peripheral direction in the closing position. Particularly the fin may be locked between two peripheral stops blocking a turning in both peripheral directions, wherein the blocking function of at least one peripheral stop may be overcome for unlocking and releasing the fin. Further the fin, particularly a plurality of fins, provides an element which can be grabbed by a user for applying a force to the operating assembly, particularly for releasing or locking. Particularly the fin may protrude in radial direction and may extend in axial direction. Further, the fin may stiffen the part to which it is connected, particularly the closure.

[0013] Preferably the stop is connected in peripheral direction with a slot extending in axial direction for receiving the fin in the opening position. The fin may be moved along a face of the stop until the fin meets the slot after a turning of the fin relative to the stop along a predefined

peripheral angle. Then the fin can be inserted into the slot and moved in axial direction within the slot. The slot may guide the fin at least partially along its axial displacement inside the slot. The slot may terminate at a further stop limiting a further axial insertion of the fin inside the slot and thus defining the opening position. The slot may be provided by the closure, while the fin is provided by the connection means. Preferably the slot is provided by the connection means, while the fin is provided by the closure. Particularly the fin is blocked in peripheral direction when inserted into the slot. Hence, a combination of two different subsequent moving directions of the closure relative to the connection means is given for opening or closing the spout so that an unintentionally opening or closing of the spout can be prevented. Particularly several slots are provided, which may be equally distributed in peripheral direction. For instance the subsequent slots are spaced to each other by a peripheral angle β of $\beta = 45° \pm 2°$ or $\beta = 60° \pm 2°$ or $\beta = 90° \pm 2°$.

[0014] Particularly preferred the stop transits into the slot via an inclined part, wherein particularly the inclined part and the slot forms a funnel-like shape. The fin can be easily threaded into the slot due to the inclined part. The risk that the closure is turned by a too large peripheral angle passing the slot is reduced. The handling of the spout is facilitated. Particularly preferred the slot transits at both tangential rims into an inclined part forming a funnel-like shape at its end connected to the stop.

[0015] Particularly the fin is part of the closure and the slot is part of the connection means, wherein particularly the connection means comprises a guiding ring arranged radially outside the flow pipe, wherein the slot is provided in the guiding ring of the connection means. The slot provided by the connection means may not be provided by the flow pipe itself but by a further, particularly coaxially arranged, guiding ring. Hence, the slot of the connection means leads not to a leakage of the content of the refill container. Preferably the guiding ring is one-piece with the flow pipe. Particularly the guiding ring comprises a ring part extending continuous plane in circumferential direction this means without an opening, so that this ring part, where no slot is provided, may be used for sealing the closure against the connection means. A sealing may be provided between the closure and the guiding ring.

[0016] Preferably the operating assembly comprises a peripheral stop for blocking one peripheral direction for the closure relative to the flow pipe in a closing direction. The closing direction is a peripheral direction into which the closure or the connection means has to be turned for meeting the peripheral stop, when the spout should be closed. The peripheral stop may block a further turning of the closure relative to the connection means when the closing position is already reached. The peripheral stop facilitates the correct locking of the closure with the connection means. Particularly the fin may meet the peripheral stop, when the closing position is reached.

[0017] Particularly preferred the operating assembly comprises an overrun stop for blocking one peripheral direction for the closure relative to the flow pipe at a peripheral angle, where the closure is movable in axial direction towards the opening position. The overrun stop may block a further turning of the closure relative to the connection means when the closure reached a sufficient peripheral angle for moving the closure in axial direction. Particularly preferred the overrun stop is provided at a rim of the slot or an end of an inclined part running away from the slot.

[0018] Particularly the closure comprises a radially protruding, particularly ring-shaped, handling element for displacing and/or turning the closure by hand. Preferably the handling element is connected with the fin, particularly with all provided fins. The handling element provides a part that can be grabbed by a user for displacing the closure relative to the connection means in axial direction. Particularly the fins can be utilized for turning the closure. A sufficient force for releasing the operating assembly can be applied to the operating assembly via the handling element and/or the fins.

[0019] Preferably the closure, particularly the handling element, and/or the closure, particularly the guiding ring, comprises an opening indicator for visualizing a turning direction for turning the closure from the closing position into the opening position and/or an closing indicator for visualizing a turning direction for turning the closure from the opening position into the closing position. The indicator(s) facilitate(s) the handling of the closure opening and closing the spout. A corresponding writing and/or an elevated or deepened area may provide the indicator. Particularly the indicator can be noticed by a user on sight and/or haptically by the hand of the user. For instance the opening indicator may represent an arrow and an opened lock and/or the closing indicator may represent an arrow and a closed lock illustrating the respective turning direction.

[0020] Particularly preferred the maximum moved out position of the closure relative to the flow pipe in an axial direction away from the opening position is limited, particularly via a retainer recess and/or a retainer nose and/or a snap connector between the closure and the connection means. The closure may be held in a defined axial position in the closing position so that a secure locking in the operating assembly is given. Particularly an axial movement of the fin relative to the stop in the closing position may be prevented or at least limited to such a small amount that an accidentally escaping the locking of the operating assembly is prevented. Further the closure can be loss-proof connected with the connection means but still allowing an axial displacement between the closing position and the opening position. Particularly the closure comprises a retainer and/or snap connector, which may meet a protruding part of the guiding ring of the connection means.

[0021] Particularly the plug is connected to the remaining closure via webs, wherein particularly the webs are aligned mainly in axial direction. The plug, the webs and the remaining part of the closure, to which the webs are

connected at its ends pointing away from the plug, may border the lateral connection opening of the closure. Preferably the webs are connected to the plug via a stiffening ring, wherein the stiffening ring stiffens the plug in a region, where the plug is pressed into the flow pipe for sealing the flow pipe in the closing position. The remaining part of the closure, to which the webs are connected at its ends pointing away from the plug, may be formed like a ring, particularly providing the outlet orifice of the closure.

[0022] Preferably the flow pipe is formed mainly funnel-shape with a flow opening at its narrow end, wherein the flow opening is closed by means of the plug inserted into the flow opening in the closing position. When the plug is moved in its opening position, the plug may be positioned inside a funnel-shaped part of the flow pipe so that it is not necessary to position the plug inside the refill container. The emptying of the refill container is facilitated. Particularly the content of the refill container can be collected and concentrated by the funnel-shaped flow pipe.

[0023] Particularly preferred the outlet orifice of the closure comprises a, particularly ring-shaped, recess for receiving a rim of an inlet opening of a bottle to be refilled. When the closure is put onto the inlet opening of the bottle upside down a part of the closure forming the recess may be inserted radially inwards into the inlet opening, wherein another part may of the closure forming the recess may surround the inlet opening radially outwards. The inner part of the closure forming the recess may be tapered facilitating the insertion of a part of the closure into the inlet opening of the bottle. The outlet orifice may be designed for meeting a particular design of the inlet opening of the bottle. If the outlet orifice fits not the design of the inlet opening of a particular bottle, the user receives a natural feedback that the content of the refill container is not intended for this particular bottle. A refilling of a bottle with the wrong content may be prevented. In addition the insertion of the rim of the inlet opening of the bottle into the recess leads to a significant positive fit of the spout with the bottle so that the risk of spilling content is prevented or at least reduced.

[0024] A further aspect of the invention is directed to a refill bag comprising a pouch for storing a refill content, particularly a fluid cosmetic product, and a spout, which may be designed as previously described, fixed to the pouch via its connection means for sealing the pouch. Due to the operating assembly a multiple opening and secure sealing of the spout is realized so that a facilitated multiple use of a refill container for refilling a bottle multiple times is enabled.

[0025] A further aspect of the invention is directed to a kit for manufacturing a spout, which may be designed as previously described, comprising a connection means for being connected to a refill container, a first closure for providing a spout, which may be designed as previously described, when connected to the connection means, wherein the first closure comprises a first outlet orifice adapted to the shape of a first inlet opening of a first bottle to be refilled and a second closure for providing a spout, which may be designed as previously described, when connected to the connection means, wherein the second closure comprises a second outlet orifice adapted to the shape of a second inlet opening of a second bottle to be refilled, wherein the shape of the second outlet orifice is different to the shape of the first outlet orifice. Due to the operating assembly a multiple opening and secure sealing of the spout is realized so that a facilitated multiple use of a refill container for refilling a bottle multiple times is enabled. In addition the same connection means can be used for different spouts adapted to different bottles reducing the manufacturing costs. Exchanging the closure by a closure adapted for a different bottle is sufficient for adapting the spout to a different bottle to be refilled.

[0026] A further aspect of the invention is directed to a method for manufacturing a spout, which may be designed as previously described, comprising the steps of providing a connection means for being connected to a refill container, providing a first closure for providing a spout, which may be designed as previously described, when connected to the connection means, wherein the first closure comprises a first outlet orifice adapted to the shape of a first inlet opening of a first bottle to be refilled, providing a second closure for providing a spout, which may be designed as previously described, when connected to the connection means, wherein the second closure comprises a second outlet orifice adapted to the shape of a second inlet opening of a second bottle to be refilled, wherein the shape of the second outlet orifice is different to the shape of the first outlet orifice, selecting the first closure or the second closure in dependence of the shape of the bottle intended to be refilled and connecting the selected closure with the connection means. Due to the operating assembly a multiple opening and secure sealing of the spout is realized so that a facilitated multiple use of a refill container for refilling a bottle multiple times is enabled. In addition the same connection means can be used for different spouts adapted to different bottles reducing the manufacturing costs. Exchanging the closure by a closure adapted for a different bottle is sufficient for adapting the spout to a different bottle to be refilled.

[0027] These and other aspects of the invention will be apparent from and elucidated with reference to the embodiments described hereinafter, wherein the described features can constitute each solely or in combination an independent aspect of the invention. In the drawings:

Fig. 1: is a perspective view of a spout in closing position,

Fig. 2: is a perspective view of the spout of Fig. 1 in opening position,

Fig. 3: is a cross sectional view of the spout of Fig. 1,

Fig. 4: is a cross sectional view of the spout of Fig. 2 along a section plane turned by 90° with respect

to the section plane of Fig. 3,
Fig. 5: is a perspective view of a detail of the spout of Fig. 1 in closing position,
Fig. 6: is a is a perspective view of a detail of the spout of Fig. 5 after a relative movement towards the opening position,
Fig. 7: is a is a perspective view of a detail of the spout of Fig. 6 after a further relative movement towards the opening position,
Fig. 8: is a perspective view of a detail of the spout of Fig. 7 after reaching the opening position,
Fig. 9: is a perspective view from above of a closure for the spout of Fig. 1,
Fig. 10: is a perspective view from below of the closure of Fig. 9,
Fig. 11: is a perspective view from above of a connection means for the spout of Fig. 1 and
Fig. 12: is a perspective view from below of the connection means of Fig.11.

[0028] The spout 10 as illustrated in Fig. 1 comprises a connection means 12 as illustrated in Fig. 11 and Fig. 12 and a closure 14 as illustrated in Fig. 9 and Fig. 10 connected to the connection means 12. The connection means 12 comprises several plates 16 by which the spout 10 can be fixed to a pouch forming a refill bag. In the illustrated closing position of the spout 10 the closure 14 is positioned away from the plates 16. The closure 14 comprises a plug 18, which is press-fitted inserted into a flow opening 20 of a mainly funnel-shaped flow pipe 22 of the connection means 12 as illustrated in Fig. 3. The flow pipe 22 and therefore the spout 10 is sealed in the illustrated closing position.

[0029] The plug 18 is connected via several webs 24 to the remaining closure 14. In the illustrated embodiment a stiffening ring 25 is provided between the plug 18 and the webs 24 securing a press fit of the plug 18 inside the flow opening 20 of the flow pipe 22. Lateral connection openings 26 are provided between the webs 24. The closure 14 comprises an outlet orifice 28 which can be put onto an inlet opening of a bottle to be refilled. A ring-shaped recess 30 is provided inside the outlet orifice 28, into which a corresponding rim of the inlet opening may be inserted. When the closure 14 is put onto the inlet opening of the bottle upside down a part of the closure 12 forming the recess 30 may be inserted radially inwards into the inlet opening, wherein another part may of the closure 12 forming the recess 30 may surround the inlet opening radially outwards.

[0030] The closure 14 comprises a collar 32 arranged coaxially and radial outwards to the flow pipe 22. The collar 32 may function like a funnel during a refilling and may prevent that a content of the pouch may escape between the closure 14 and the connection means 12. If so, a sealing 34, like a O-ring, sealing lip or contacting nose, may be provided between the collar 32 and a guiding ring 36 of the connection means 12 so that a liquid tight sealing between the closure 14 and the connection means 12 is given even when the flow pipe 22 is opened. If so, the sealing 34 may be omitted. The guiding ring 36 is arranged coaxially and radial outwards to the flow pipe 22 and may be arranged radially inside or outside the collar 32. The closure 14 is loss-proof connected with the connection means 12 via clip connectors 38 each providing a recess 40 which limits the axial position of the closure 14 relative to the connection means 12 in an axial direction away from the plates 16.

[0031] The closure 14 is locked with the connection means 12 in the closing position via an operating assembly 42. The operating assembly 42 is provided by means of a radial protruding fin 44 which may be locked in peripheral direction between a peripheral stop 46 and a locking element 48 designed as a ramp. The locking element 48 of the operating assembly provides a locking element providing a locking by means of friction and/or a slight positive fit. The holding force of the locking element 48 may be overcome when a user applies a sufficient force in peripheral direction, particularly via a handling element 50. For example, the locking element 48 may elastically bend away in axial direction when a sufficient force is applied to the locking element 48 in tangential direction. In the illustrated embodiment the handling element 50 is designed as a circumferential ring only connected to all provided fins 44. The handling element 50 comprises opening indicators 52 indicating the right turning direction for releasing the operating assembly 42. After releasing the operating assembly 42 the closure 14 can be turned in peripheral direction along a specific peripheral angle, which is in the illustrated embodiment a peripheral angle α of $\alpha = 38°$, and subsequently displaced in axial direction relative to the connection means 12 until an opening position as illustrated in Fig. 2 and Fig. 4 is reached. The lateral openings 26 of the closure provides a communication between the flow pipe 22 of the connection means 12 with the outlet orifice 28 of the closure 14 in the opening position.

[0032] The kinematics of the spout 10 between the closing position and the opening position is illustrated in Fig. 5 to Fig. 8. First the closure 14 is locked with the connection means 12 in the closing position as illustrated in Fig. 5. The operating assembly 42 blocks a relative movement in both peripheral directions. Further the fin 44 abuts a rim of the connection means 12 which provides a stop 54 in axial downwards direction. The clip connectors 38 block a movement in axial upwards direction so that the closure 14 and the connection means 12 is mainly immovable locked in the operating assembly 42. When a sufficient force is applied to the fins 44, the fin 44 can be turned from the peripheral stop 46 away over the locking element 48 as illustrated in Fig. 6. The closure can be turned, but an axial movement of the fin 44 is still blocked by the stop 54 and the clip connectors 38. The fin can be further turned until the fin 44 is arrange mainly above a slot 56 provided in the guiding ring 36 of the connection means 12 as illustrated in Fig. 7. Particularly the slot 56 is connected to the stop 54 via an inclined

part 58 providing a funnel-like inlet to the slot 56, by means of with a threading of the fin 44 into the slot 56 is facilitated. An overrun stop 60 is provided so that the fin 44 cannot be turned too far for meeting the slot 56. Particularly the overrun stop 60 and the peripheral stop 46 for the subsequent fin 44 may be positioned close to each other and may be particularly spaced to each other by a peripheral angle of 3° to 30°, preferably 5° to 20° and particularly preferred 8° to 13°. The fin may be turned between the peripheral stop 46 and the overrun stop 60 by a peripheral angle of 25° to 53°, preferably 35° to 51° and particularly preferred 42° to 48°. After the end of the turning movement of the fin 44 the fin can be moved in axial direction into the slot 56 until the fin 44 meets the axial end of the slot 56 in the opening position as illustrated in Fig. 8. In the opening position a turning of the fin 44 in peripheral direction is blocked by the slot 56 as well as in axial downwards direction. When the spout 10 is put onto the inlet opening of a bottle to be refilled, an axial upwards direction of the fin 44 is blocked by the bottle. When the spout 10 should be closed again the above described kinematics can be applied in reverse. The fin 44 can be moved in axial direction upwards particularly until the clip connectors 38 blocks a further axial movement. Subsequently the fin 44 can be turned towards the peripheral stop 46 until the fin 44 is locked in the operating assembly 42 and the plug 18 seals the flow pipe 22 again.

Claims

1. Spout for a refill container comprising

a connection means (12) for being connected to a refill container,
wherein the connection means (12) comprises a flow pipe (22) for communicating with the interior of the refill container, and
a closure (14) for opening and/or closing the flow pipe (22),
wherein the closure (14) comprises a plug (18) for sealing the flow pipe (22) in a closing position,
wherein the plug (18) comprises at least one lateral connection opening (26) for communicating with an outlet orifice (28) of the closure (14) and the flow pipe (22) in an opening position, where the plug (18) is axially displaced with respect to the closing position along the axial alignment of the flow pipe (22),
characterized in that
the closure (14) is axially blocked in an axial direction towards the opening position in the closing position by means of an operating assembly (42),
wherein the closure (14) is axial moveable towards the opening position at a relative position displaced in peripheral direction to the closing position by a peripheral angle.

2. Spout according to claim 1 wherein the operating assembly (42) comprises a locking element (48) for repeatable releasably connecting the closure (14) with the connection means (12) in the closing position, wherein the locking element (48) is releasable and lockable by means of turning the closure (14) relative to the flow pipe (22).

3. Spout according to claim 2 wherein the operating assembly (42) comprises a radially outwards protruding fin (44) for abutting a stop (54) in axial direction in the closing position.

4. Spout according to claim 3 wherein the stop (54) is connected in peripheral direction with a slot (56) extending in axial direction for receiving the fin (44) in the opening position.

5. Spout according to claim 3 or 4 wherein the stop (54) transits into the slot (56) via an inclined part (58), wherein particularly the inclined part (58) and the slot (56) forms a funnel-like shape.

6. Spout according to anyone of claims 3 to 5 wherein the fin (44) is part of the closure (14) and the slot (56) is part of the connection means (12), wherein particularly the connection means (12) comprises a guiding ring (36) arranged radially outside the flow pipe (22), wherein the slot (56) is provided in the guiding ring (36) of the connection means (12).

7. Spout according to anyone of claims 1 to 6 wherein the operating assembly (42) comprises a peripheral stop (46) for blocking one peripheral direction for the closure (14) relative to the flow pipe (22) in a closing direction.

8. Spout according to anyone of claims 1 to 7 wherein the operating assembly (42) comprises an overrun stop (60) for blocking one peripheral direction for the closure (14) relative to the flow pipe (22) at a peripheral angle, where the closure (14) is movable in axial direction towards the opening position.

9. Spout according to anyone of claims 1 to 8 wherein the closure (14) comprises a radially protruding, particularly ring-shaped, handling element (50) for displacing and/or turning the closure (14) by hand.

10. Spout according to anyone of claims 1 to 9 wherein the maximum moved out position of the closure (14) relative to the flow pipe (22) in an axial direction away from the opening position is limited, particularly via a retainer recess and/or a retainer nose and/or a snap connector (38) between the closure (14) and the connection means (12).

11. Spout according to anyone of claims 1 to 10 wherein the plug (18) is connected to the remaining closure (14) via webs (24), wherein particularly the webs (24) are aligned mainly in axial direction.

12. Spout according to anyone of claims 1 to 11 wherein the outlet orifice (28) of the closure (14) comprises a, particularly ring-shaped, recess (30) for receiving a rim of an inlet opening of a bottle to be refilled.

13. Refill bag comprising a pouch for storing a refill content, particularly a fluid cosmetic product, and a spout (10) according to anyone of claims 1 to 12 fixed to the pouch via its connection means (12) for sealing the pouch.

14. Kit for manufacturing a spout (10) according to anyone of claims 1 to 12 comprising

a connection means (12) for being connected to a refill container,
a first closure (14) for providing a spout (10) according to anyone of claims 1 to 12 when connected to the connection means (12), wherein the first closure (14) comprises a first outlet orifice (28) adapted to the shape of a first inlet opening of a first bottle to be refilled and
a second closure (14) for providing a spout (10) according to anyone of claims 1 to 12 when connected to the connection means (12), wherein the second closure (14) comprises a second outlet orifice (28) adapted to the shape of a second inlet opening of a second bottle to be refilled, wherein the shape of the second outlet orifice (28) is different to the shape of the first outlet orifice (28).

15. Method for manufacturing a spout (10) according to anyone of claims 1 to 12 comprising the steps of

providing a connection means (12) for being connected to a refill container,
providing a first closure (14) for providing a spout (10) according to anyone of claims 1 to 12 when connected to the connection means (12), wherein the first closure (14) comprises a first outlet orifice (28) adapted to the shape of a first inlet opening of a first bottle to be refilled,
providing a second closure (14) for providing a spout (10) according to anyone of claims 1 to 12 when connected to the connection means (12), wherein the second closure (14) comprises a second outlet orifice (28) adapted to the shape of a second inlet opening of a second bottle to be refilled, wherein the shape of the second outlet orifice (28) is different to the shape of the first outlet orifice (28),
selecting the first closure (14) or the second closure (14) in dependence of the shape of the bottle intended to be refilled and
connecting the selected closure (14) with the connection means (12).

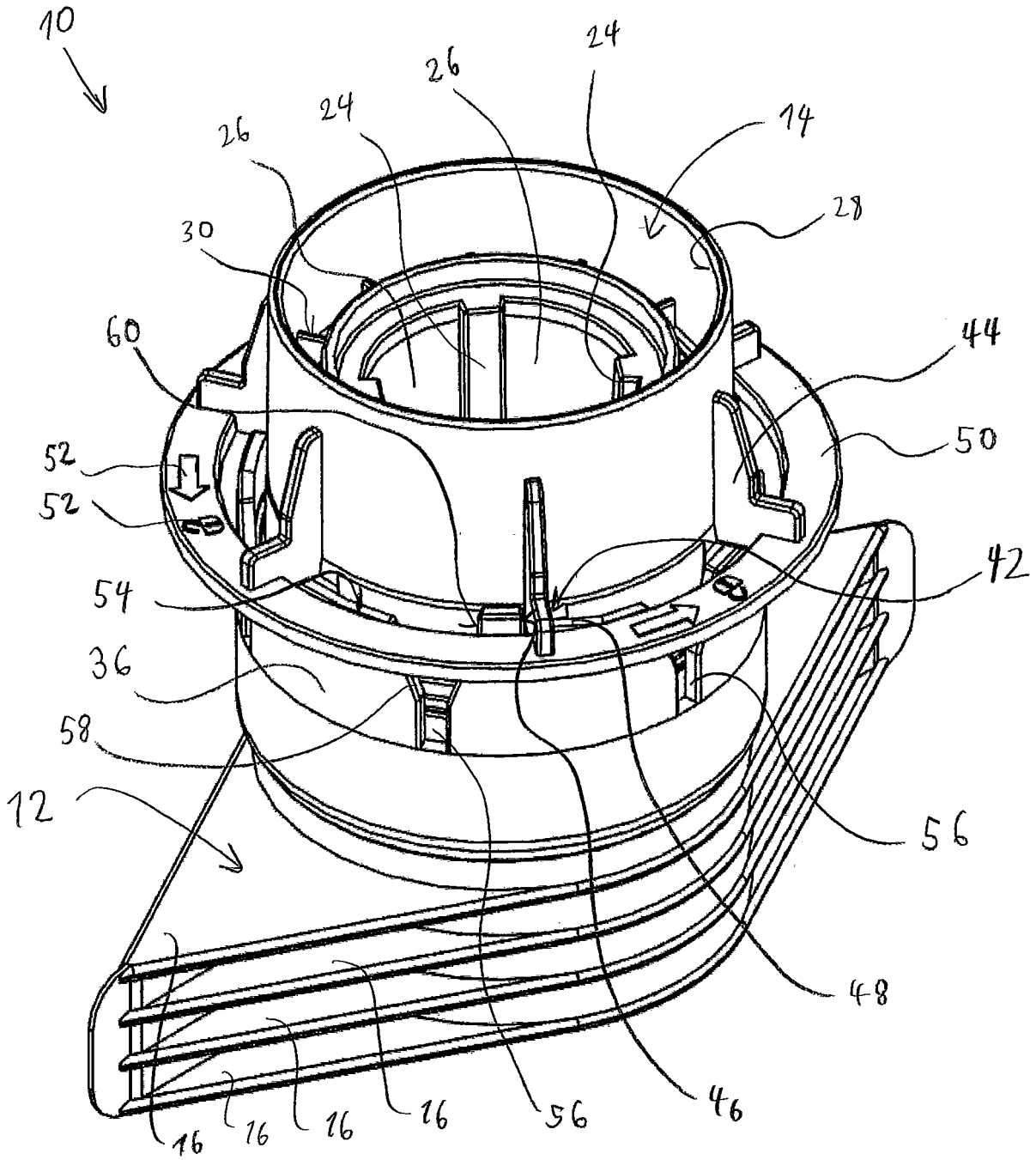

10
26
24
26
24
14
28
30
60
44
50
52
52
42
54
36
58
12
56
48
46
16
16
16
16
56

Fig. 1

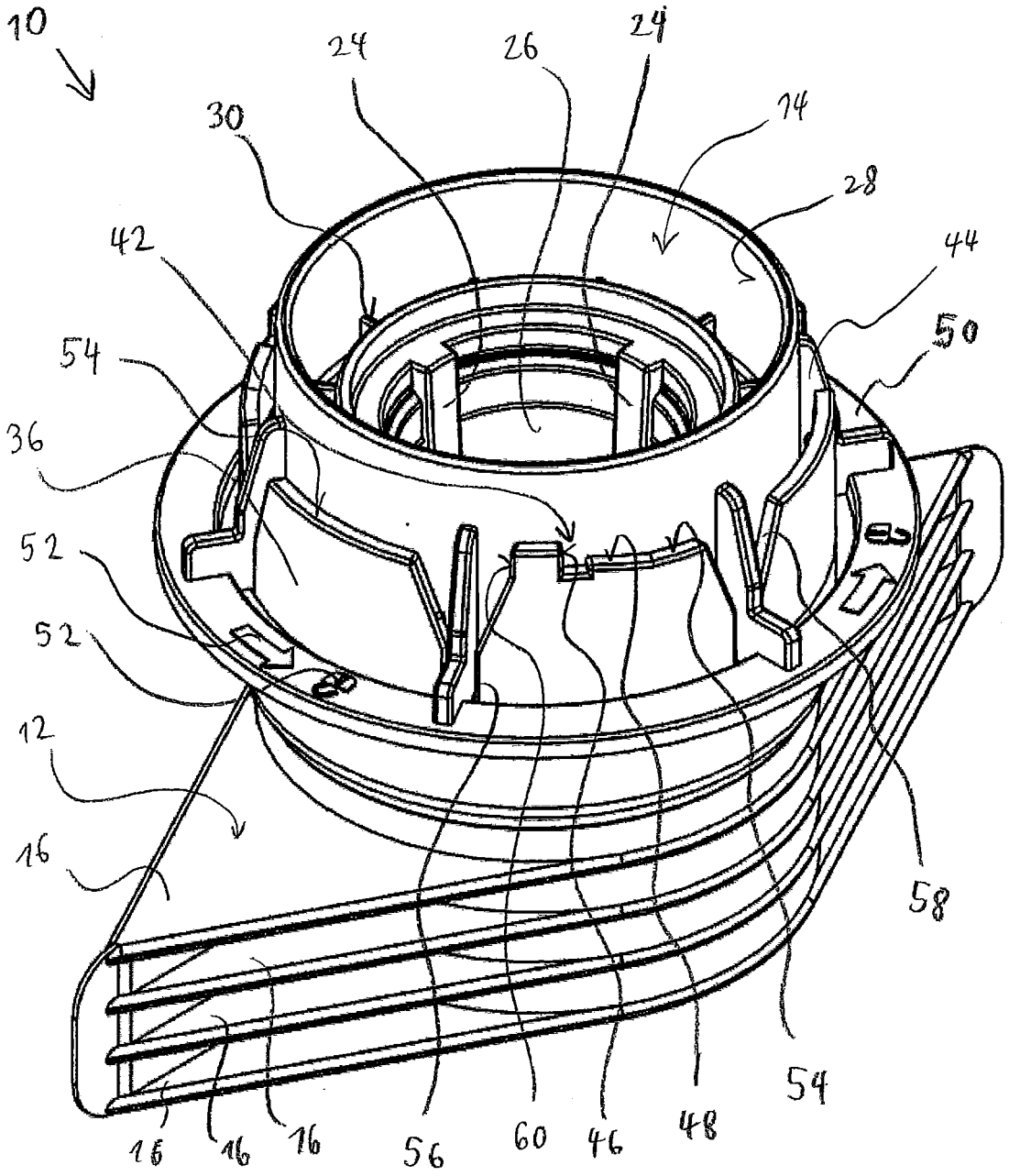

10
24
26
24
30
14
28
42
44
50
54
36
52
52
12
16
58
54
16
16
16
56
60
46
48

Fig. 2

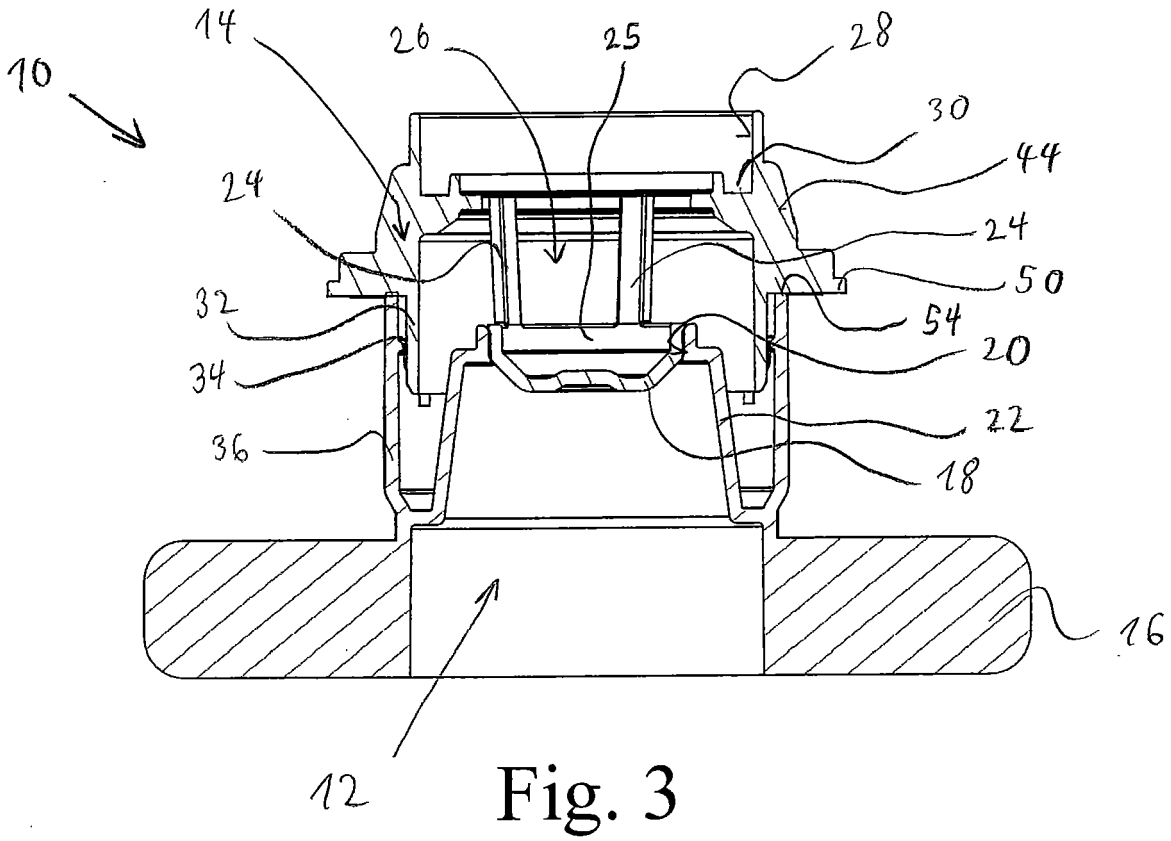

10
14
26
25
28
30
44
24
24
50
32
54
34
20
22
36
18
16
12

Fig. 3

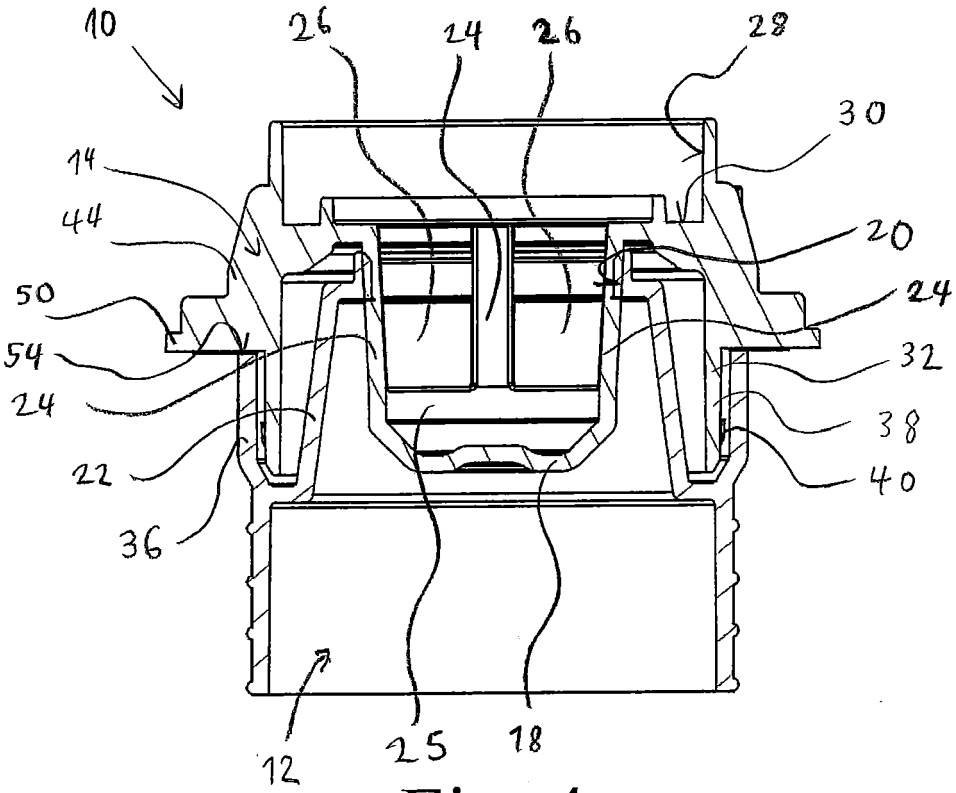

10
26
24
26
28
30
14
44
20
50
24
54
32
24
38
22
40
36
12
25
18

Fig. 4

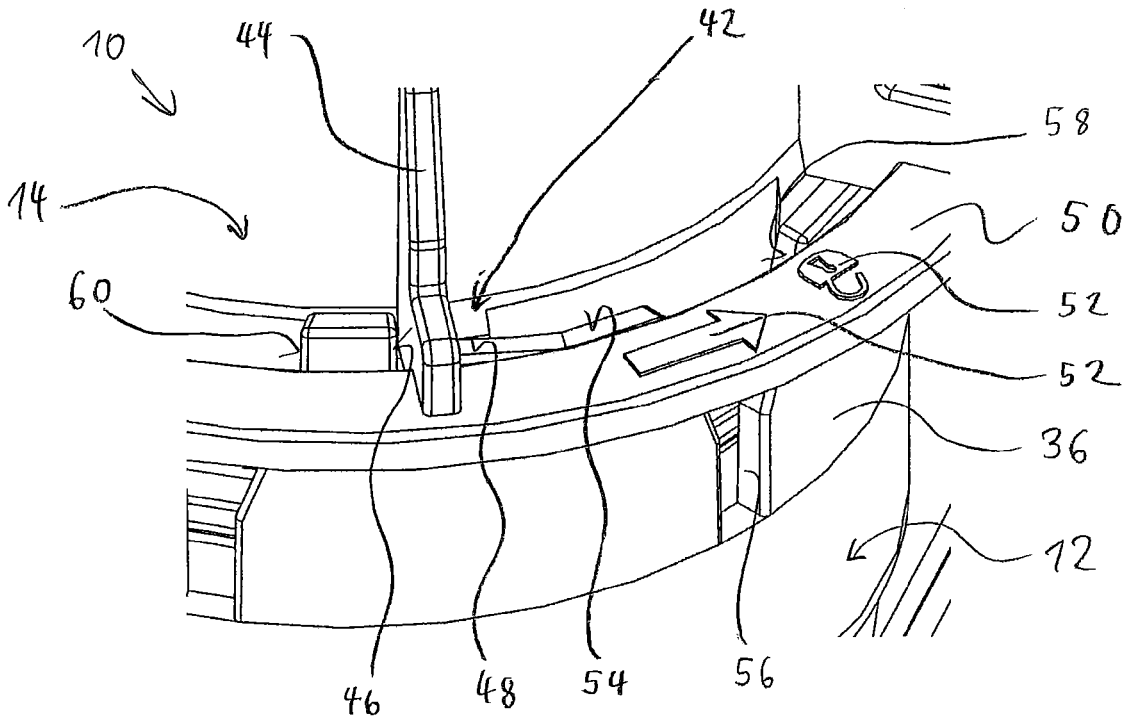

10
44
42
58
14
50
60
52
52
36
12
46
48
54
56

Fig. 5

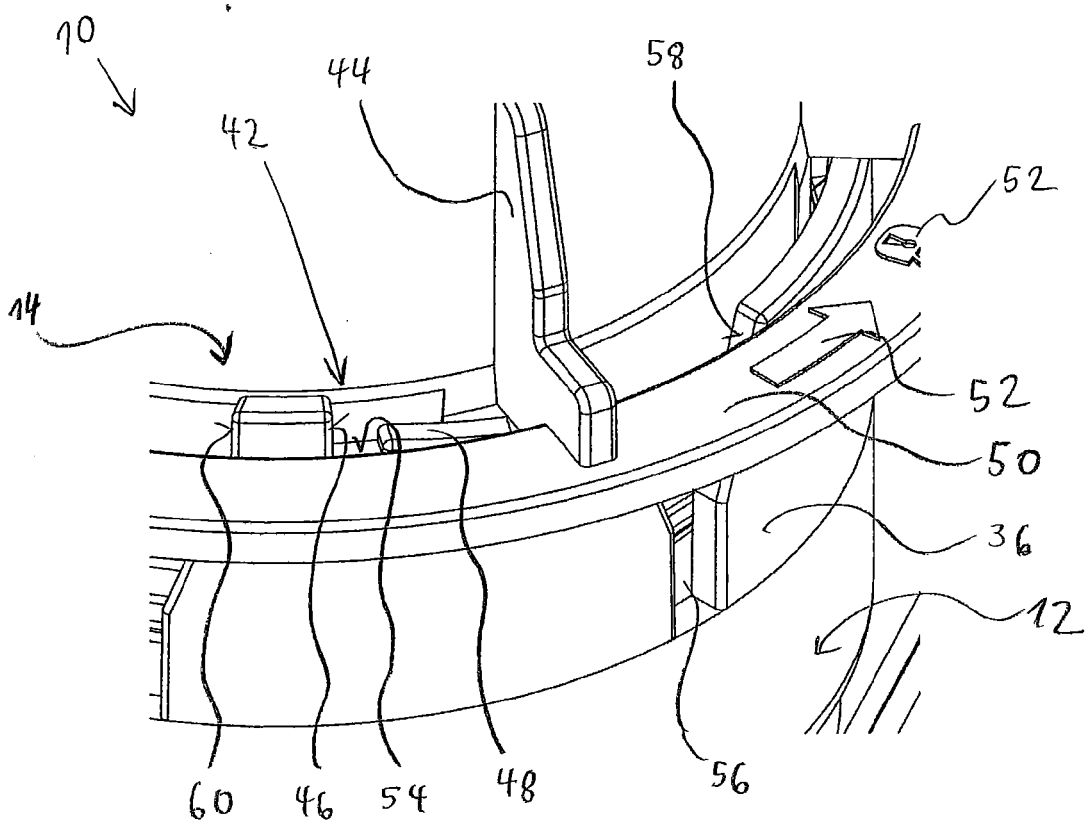

10
44
58
42
52
14
52
50
36
12
60
46
54
48
56

Fig. 6

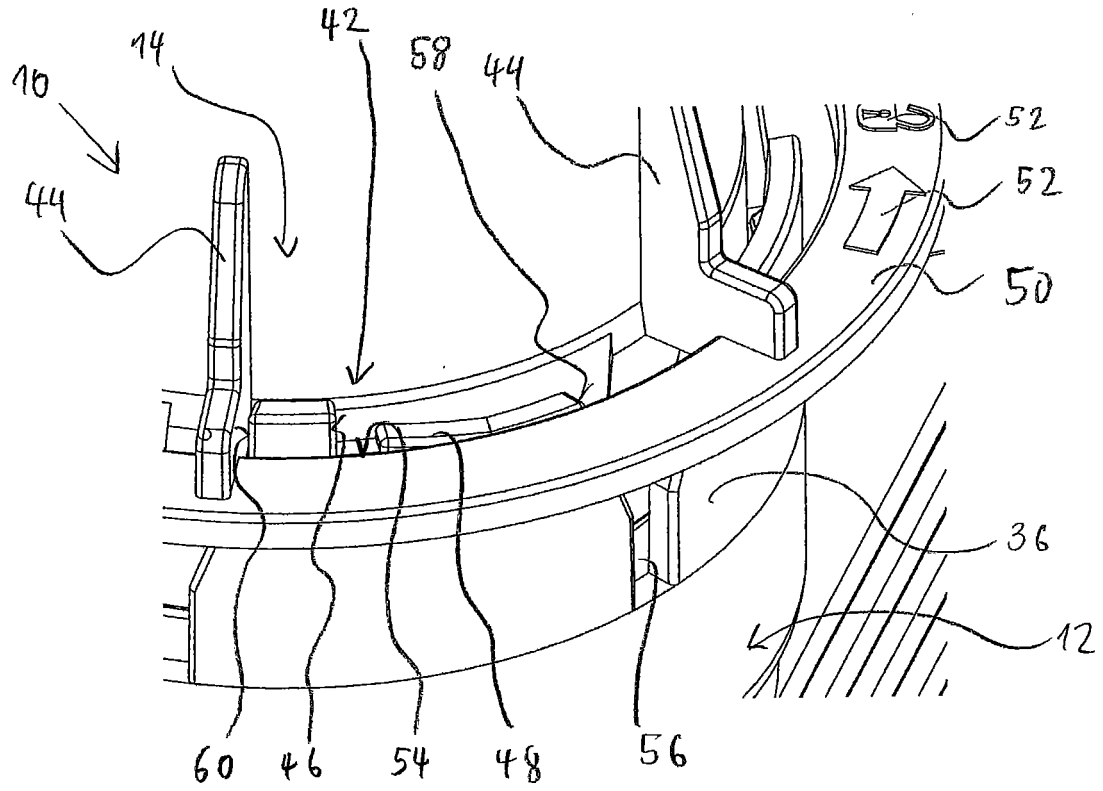

10
14
42
58
44
52
52
50
44
36
12
60
46
54
48
56

Fig. 7

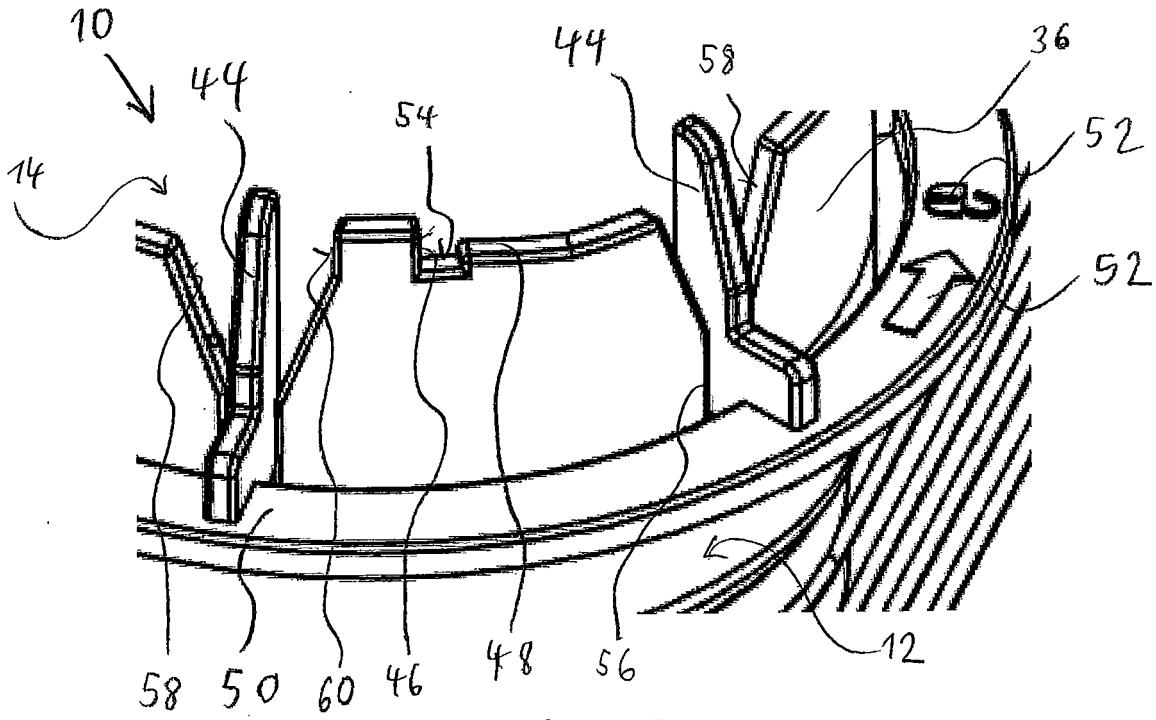

10
44
14
54
44
58
36
52
52
12
58
50
60
46
48
56

Fig. 8

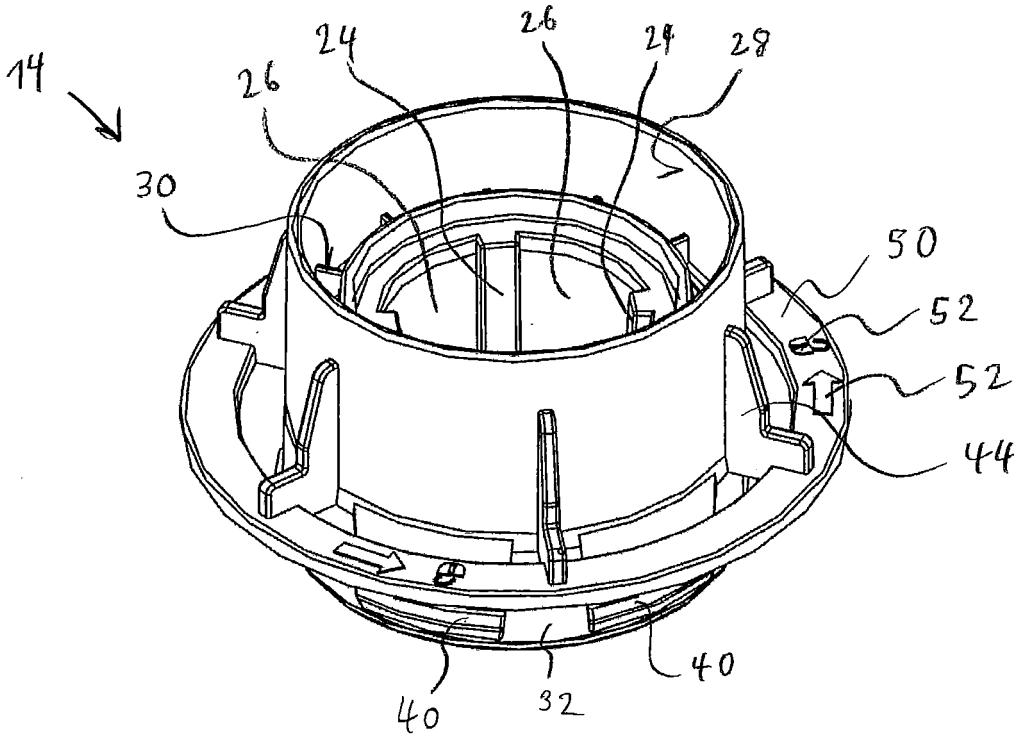

14
24
26
26
28
29
30
50
52
52
44
40
40
32

Fig. 9

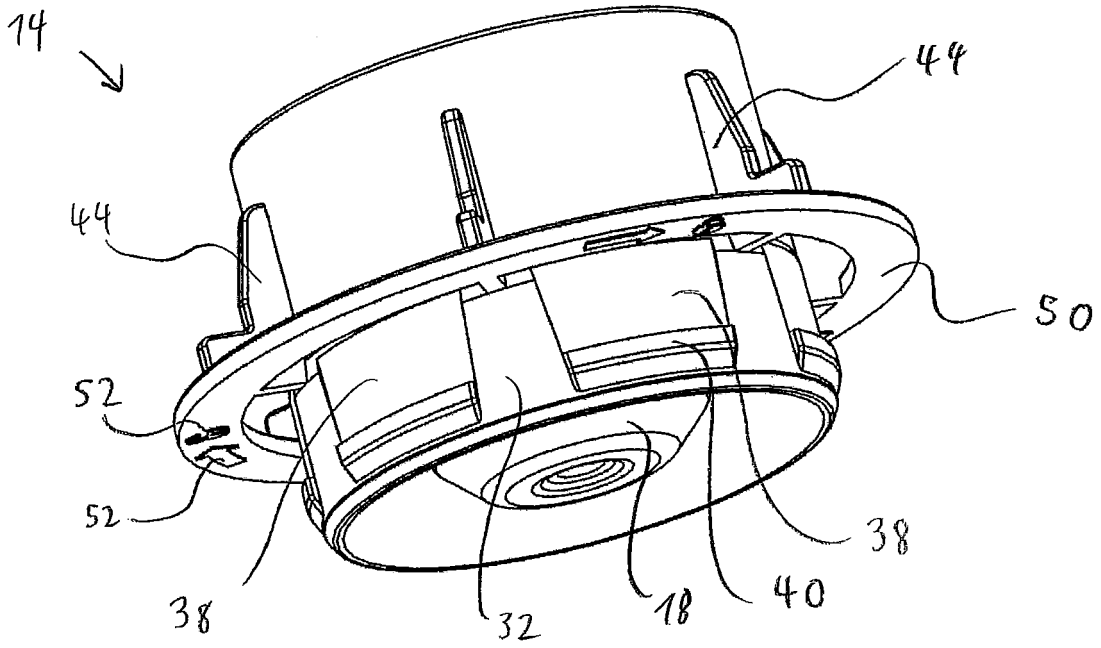

14
44
44
50
52
52
38
38
32
18
40

Fig. 10

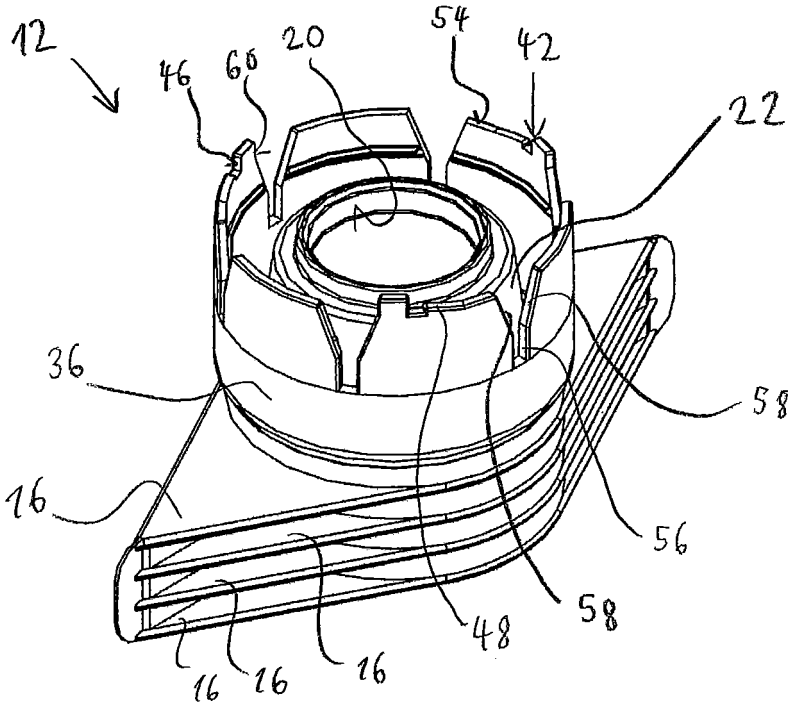

12
46
60
20
54
42
22
36
58
16
56
58
48
16
16
16

Fig. 11

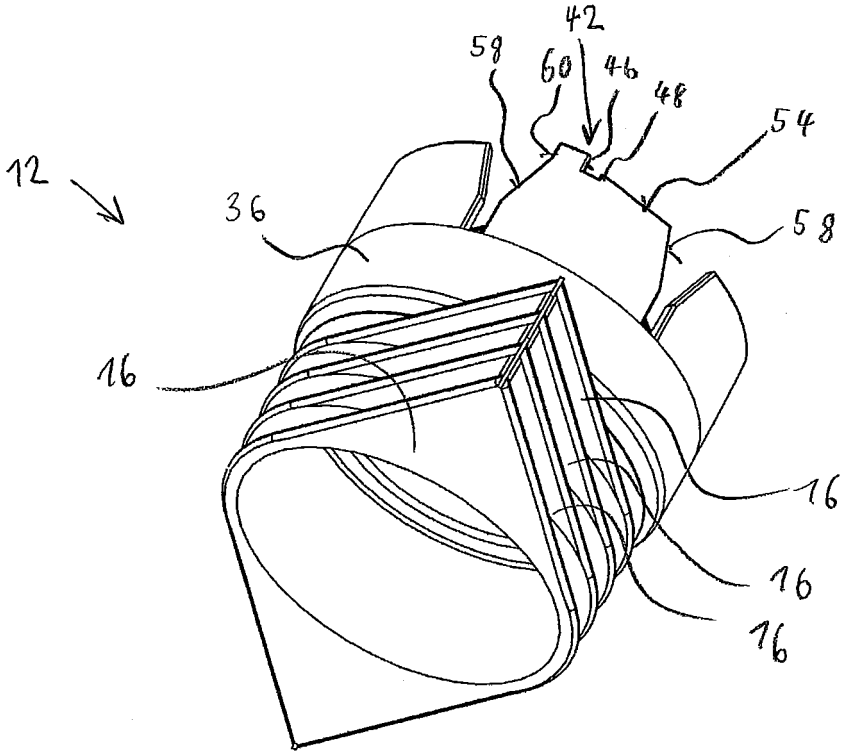

42
58
60
46
48
54
12
36
58
16
16
16
16

Fig. 12

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 16 15 8128

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	US 5 337 931 A (KITTERMAN DONALD M [US]) 16 August 1994 (1994-08-16) * column 10, lines 23-63; figures 14-17 *	1-6,9, 10,12 13	INV. B65D47/24 B65D5/74 B65D75/58
X	FR 2 810 964 A1 (EL BOUABDELLATI ABDELKADER [FR]) 4 January 2002 (2002-01-04) * the whole document *	1,2,9-11	ADD. B65D50/06
X	WO 96/18552 A1 (EILERTSEN EDGAR [NO]) 20 June 1996 (1996-06-20) * the whole document *	1,2,9,10	
Y	WO 2015/114755 A1 (TECHNOCRATS CORP [JP]) 6 August 2015 (2015-08-06) * the whole document *	13	
A	US 4 773 567 A (STOODY WILLIAM R [US]) 27 September 1988 (1988-09-27) * the whole document *	1-13	
A	EP 1 884 482 A2 (SHEK TAT KIT [CN]) 6 February 2008 (2008-02-06) * abstract; claims; figures *	1-13	TECHNICAL FIELDS SEARCHED (IPC) B65D
A	JP H10 147335 A (DAINIPPON PRINTING CO LTD) 2 June 1998 (1998-06-02) * abstract; figures *	13	

~~The present search report has been drawn up for all claims~~

Place of search	Date of completion of the search	Examiner
The Hague	15 August 2016	Dederichs, August

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

Europäisches Patentamt
European Patent Office
Office européen des brevets

Application Number
EP 16 15 8128

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-13

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

Europäisches Patentamt
European Patent Office
Office européen des brevets

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 16 15 8128

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-13

   Spout for a refill container comprising a closure which is movable between a closed and an open position and which can be blocked in the closed position by an operating assembly which is manually rotatable for unblocking the closure and enabling the linear movement thereof into the opened position, and bag container provided with such a spout

   ---

2. claims: 14, 15

   Kit and method for manufacturing a spout, involving a first closure mounted on a refill container and a second closure mounted on another container to be refilled, respective outlet orifices of the first and the second spout differently shaped and being adapted to each other for enabling connecting the two spout openings for a refilling process

   ---

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 16 15 8128

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

15-08-2016

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5337931 A	16-08-1994	NONE	
FR 2810964 A1	04-01-2002	NONE	
WO 9618552 A1	20-06-1996	AU 4273296 A	03-07-1996
		NO 944791 A	13-06-1996
		WO 9618552 A1	20-06-1996
WO 2015114755 A1	06-08-2015	NONE	
US 4773567 A	27-09-1988	NONE	
EP 1884482 A2	06-02-2008	CN 200971208 Y	07-11-2007
		EP 1884482 A2	06-02-2008
		HK 1101658 A2	26-10-2007
		US 2008041809 A1	21-02-2008
JP H10147335 A	02-06-1998	NONE	

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 2012210953 A **[0002]**