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(54) Title: APPLICATOR

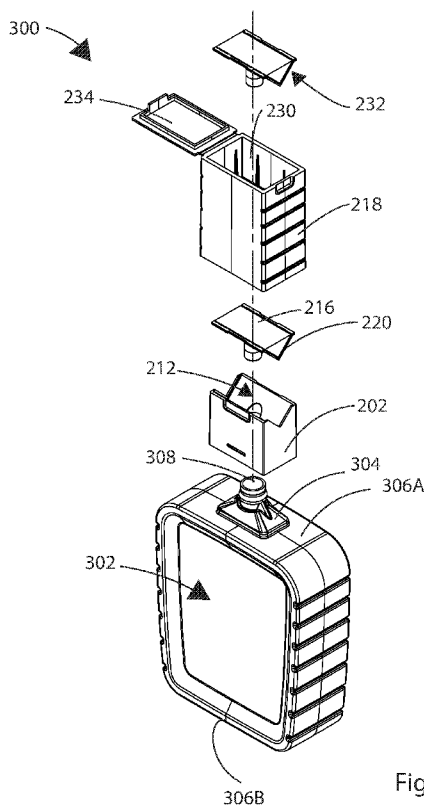


Fig. 4

(57) Abstract: A nozzle for dispensing a material on a substrate is provided. The nozzle includes an elongate member defining a transverse axis. The elongate member includes a first end and a second end that is distally located from the first end. The nozzle further includes a porous member that is disposed on the second end and fluidly coupled to the elongate member. At least one of the porous member and the second end is configured to define a groove along the transverse axis. The porous member is further configured to apply the material on two adjoining surfaces of the substrate.

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## APPLICATOR

### Technical Field

[0001] The present disclosure relates in general to an applicator and, in particular, to a nozzle of the applicator for applying materials on a substrate.

### Background

[0002] Typically, one or more materials may be applied on substrates. For example, an adhesive or a sealant may be applied on the substrate, for example, a glass member. Moreover, based on a type of application, the material may need to be applied on one or more surfaces. In an example, for the mirror, the material such as a sealant may need to be applied around edges of one surface. However, conventional applicators may not be useful in such a case. Similarly, the applicator should be designed for easy usage and also customized to suit various sizes and configurations of the substrate or the surfaces on which the material needs to be applied. Therefore, a need for an improved applicator continues to exist.

[0003] For reference, U.S. patent 6,592,281 is related to an article of manufacture for dispensing an adhesive material, such as a synthetic or semi-synthetic polymerizable or cross-linkable monomer material. The article includes a container body, and a porous applicator tip having a proximal end that is attached to the container body, and a distal end located away from the container body, wherein the adhesive material is located in the container body in a non-contacting relationship with the applicator tip prior to dispensing the material.

### Summary of the Disclosure

[0004] In one aspect of the present disclosure, a nozzle for dispensing a material on a substrate is provided. The nozzle includes an elongate member defining a transverse axis. The elongate member includes a first end and a second end that is distally located from the first end. The nozzle further includes a porous member that is disposed on the second end and fluidly coupled to the elongate member. At least one of the porous member and the second end is configured to

define a groove along the transverse axis. The porous member is further configured to apply the material on two adjoining surfaces of the substrate.

**[0005]** In another aspect of the present disclosure, an applicator for applying a material on a substrate is provided. The applicator includes a body configured to store the material therein. The applicator also includes at least one nozzle in fluid communication with the body. The nozzle includes an elongate member defining a transverse axis. The elongate member includes a first end that is connected to an end of the body and a second end that is distally located from the first end. The nozzle includes a porous member that is disposed on the second end and in fluid communication with the body to receive the material therefrom. At least one of the second end and the porous member are configured to define a groove along the transverse axis thereof. The porous member is further configured to apply the material on two adjoining surfaces of the substrate.

**[0006]** In yet another aspect of the present disclosure, a nozzle for dispensing a material on a substrate is provided. The nozzle includes an elongate member having a first end, and a second end that is distally located from the first end. The nozzle also includes a porous member disposed on the second end. At least one of the second end and the porous member are configured to define a groove of substantially V-shape thereof. The porous member is further configured to apply the material at least partly around an edge of the substrate.

**[0007]** Other features and aspects of this disclosure will be apparent from the following description and the accompanying drawings.

#### Brief Description of the Drawings

**[0008]** Embodiments are illustrated by way of example and are not limited in the accompanying figures.

**[0009]** FIG. 1 illustrates a partial perspective view of an exemplary substrate showing a nozzle being used to apply a material thereon, according to an embodiment of the present disclosure.

**[0010]** FIG. 2 illustrates an exploded view of the nozzle, according to an embodiment of the present disclosure.

[0011] FIG. 3 illustrates a perspective view of an applicator including the nozzle, according to an embodiment of the present disclosure.

[0012] FIG. 4 illustrates an exploded view of the applicator of FIG. 3, according to an embodiment of the present disclosure.

[0013] FIG. 5 illustrates a partially exploded view of the applicator, according to another embodiment of the present disclosure.

[0014] FIG. 6 illustrates a partially exploded view of the applicator, according to yet embodiment of the present disclosure.

[0015] FIG. 7 illustrates a partially exploded view of the applicator, according to another embodiment of the present disclosure.

[0016] Skilled artisans appreciate that elements in the figures are illustrated for simplicity and clarity and have not necessarily been drawn to scale. For example, the dimensions of some of the elements in the figures may be exaggerated relative to other elements to help to improve understanding of embodiments of the invention.

#### Detailed Description

[0017] Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or the like parts. Embodiments disclosed herein are related to applicators and nozzles used to applying a material on a substrate. FIG. 1 illustrates an exemplary substrate 100. In the illustrated example, the substrate 100 has a rectangular cross-section. The substrate 100 may include multiple adjoining surfaces (two of the adjoining surfaces 102, 104 are shown in FIG. 1) defining an edge 106 therebetween. Further, the adjoining surfaces 102, 104 have an angle 'A' therebetween.

[0018] Referring to FIGS. 1 and 2, a nozzle 200 for dispensing a material on the substrate 100 is illustrated. More specifically, the nozzle 200 may be configured to apply the material partly on two adjoining surfaces 102, 104 of the substrate 100. As shown in FIG. 1, the nozzle 200 is being used to apply the material around the edge 106. In one example, the substrate 100 may be a mirror. The mirrors may include Ag, Ni, Cu, Al, Ti and combinations thereof.

**[0019]** Accordingly, a sealing material for protecting the substrate 100 against corrosion may be applied using the nozzle 200. In such a case, the nozzle 200 may be used to simultaneously apply the material partly to the coated surface of the mirror and one of the surfaces adjacent to the coated surface. In another example, the nozzle 200 may be used in carpentry work to apply the material such as glue and the like.

**[0020]** However, a person of ordinary skill will recognize that the nozzle 200 may be used in any other applications such as, medical, cosmetics and the like to dispense the material on any other corresponding substrates 100. Accordingly, the substrate may include, but not limited to, gypsum, plywood, metals, dielectrics, magnetron coated products, glass and coated glass. Further, the material may be any material such as, but not limited to, adhesives, sealants, coatings, materials for medical usage, cosmetic usage and the like.

**[0021]** Referring to FIGS. 3 and 4, an applicator 300 including the nozzle 200, according to an embodiment of the present disclosure is illustrated. The nozzle 200 and the applicator 300 will be explained hereinafter with reference to the FIGS. 1 to 4.

**[0022]** The applicator 300 includes a body 302 that contains the material. The nozzle 200 may be disposed in fluid communication with the body 302 of the applicator 300. The body may include multiple ends 306. In the illustrated embodiment of FIGS. 3 and 4, the body 302 has a rectangular shape having two ends 306A, 306B (also collectively referred to as “the ends 306”). The body 302 may include a neck portion 304 on one of the end 306 (shown as 306A) thereof. The neck portion 304 may define an opening 308 therein.

**[0023]** Referring to FIGS. 1 and 2, the nozzle 200 includes an elongate member 202 defining a transverse axis 204 thereof. The elongate member 202 includes a first end 206 and a second end 208 distally located from the first end 206. The elongate member 202 further defines a first hole 210 therethrough. The first hole 210 may be configured to be disposed in fluid communication with the opening 308 defined in the neck portion 304 of the body 302. In an embodiment,

the first hole 210 and the opening 308 may be co-axial to each other. As such, the elongate member 202 may receive the material from the body 302.

**[0024]** Accordingly, the first end 206 may be connected to the end 306 of the body 302. In an example, the first end 206 may be coupled to the neck portion 304 by an interference fit or a friction fit. In another example, the first end 206 may be coupled to the end 306 of the body 302 by adhesives, and the like. In yet another example, mechanical fasteners such as, threads, locker rings and the like may be used to accomplish the coupling between the end 306 of the body 302 and the first end 206. However, it may also be contemplated to any use other suitable methods to couple the first end 206 to the body 302 of the applicator 300. Alternatively, the body 302 and the elongate member 202 may be integral to each other, thereby having a unitary construction thereof. In such cases, the body 302 may be configured to be filled with the material via another opening (not shown).

**[0025]** The body 302 and/or the elongate member 202 may be made of different types of materials such as, but not limited to, metal, ceramics, glass, wood, or a combination thereof. In an example, the body 302 and/or the elongate member 202 may be made of poly-olefins including, but not limited to, different grades of polyethylene, polypropylene, polystyrene, polyvinyl chloride or polyesters such as polyethylene terephthalate and the like. In another example, the body 302 and/or the elongate member 202 may be made of plastics including, but not limited to, nylocast, delrin, polypropylene, polycarbonate, polyester, thermoplastic polyurethanes, thermoplastic elastomers, polyimide, PEEK, or a combination thereof .

**[0026]** In the illustrated embodiment, the elongate member 202 defines a groove 212 therein adjacent to the second end 208. As shown, the groove 212 is defined along the transverse axis 204. In an embodiment, groove 212 may have a V-shape. As shown, the second end 208 includes a pair of arms 214A, 214B (also collectively referred to as “the pair of arms 214”) inclined at an angle ‘B’ to each other and defining the groove 212 therebetween. The arms 214A, 214B have a length ‘L1’ and ‘L2’ respectively. In one example, the length ‘L1’ may be equal to length ‘L2’. In another example, the length ‘L1’ may be greater than ‘L2’. In

yet another example, the length 'L1' may be less than 'L2'. The length 'L1' and 'L2' may vary based on a type of application for the nozzle 200.

**[0027]** In an embodiment, the groove 212 may be formed within the elongate member using various methods such as cutting, drilling, filing and the like. Alternatively, the elongate member 202 with the groove 212 may be manufactured using additive manufacturing processes such as, 3D printing and the like.

**[0028]** In the illustrated embodiment, the angle 'B' between the pair of arms 214 is equal to 90 degrees. In another embodiment, the angle 'B' may lie between 60 to 120 degrees. In yet another embodiment, the angle 'B' may be in a range of 45 to 135 degrees. However, it should be understood that the V-shaped groove 212 may define any angle 'B' based on various parameters of an application for the nozzle 200.

**[0029]** The angle 'B' of the groove 212 may be selected based on the angle 'A' between the adjoining surfaces 102, 104 of the substrate 100. In an embodiment, the angle 'B' of the groove 212 may be substantially equal to the angle 'A' between the adjoining surfaces. In the illustrated embodiment, the angle 'A' between the adjoining surfaces 102, 104 of the substrate is equal to 90 degrees. Accordingly, the groove 212 may be configured to have the angle 'B' between the pair of arms 214 to be equal to 90 degrees. Referring back to FIG. 1, the nozzle 200 is being used to apply the material at least partly around the edge 106 on each of the adjoining surfaces 102 and 104 simultaneously.

**[0030]** Moreover, the shape of the groove 212 may vary based on the substrate 100 on which the material is being applied. In another embodiment, the groove 212 may have a U-shape. In an example, the groove 212 may have a semi-circular shape. With such a configuration, the nozzle 200 may be used for applying liquid material on the edges having a fillet shape.

**[0031]** The nozzle 200 further includes a porous member 216 disposed on the second end 208 of the elongate member 202. In an embodiment, the porous member 216 may be made of any foam material such as, but not limited to, polyurethane, polystyrene, polyether and phenolic foams. In another embodiment,



the porous member 216 may be made of felt material such as, but not limited to, polyesters, natural porous materials such as cotton and other cellulose based materials. However, in various other embodiments, the porous member 216 may be made of other types of material based on specific type of the application.

**[0032]** In the illustrated embodiment of FIGS. 1 to 4, the porous member 216 also defines a groove of substantially V-shape. Alternatively, the porous member 216 may not define any groove and may have a top end with planar configuration. Moreover, the porous member 216 may have a shape that conforms to the shape of the groove 212 defined by the second end 208.

**[0033]** In one embodiment, the porous member 216 may be directly disposed in the groove 212. Moreover, the porous member 216 may be attached to the pair of arms 214 using various methods, such as, for example, using adhesives. The porous member 216 may be configured to be in fluid communication with the elongate member 202. The porous member 216 may receive the material from the body 302 through the elongate member 202. As described earlier, the elongate member 202 may receive the material via the first hole 210 that is in fluid communication with the opening 308 of the body 302.

**[0034]** Further, the porous member 216 is configured to apply the material on the adjoining surfaces 102, 104 of the substrate 100. Referring to FIG. 1, the material applied on the two adjoining surfaces 102, 104 is illustrated. The porous member 216 may be configured to align to the shape of the groove 212 thereby enabling the application of the material on the adjoining surfaces around the corresponding edge 104. In an embodiment, the lengths 'L1', 'L2' may be selected based on a length to which the material is to be applied on the corresponding adjoining surfaces 102, 104. Accordingly, a suitable size of the porous member 216 may be selected based on the size of the groove 212.

**[0035]** The nozzle 200 may further include a cover member 218 configured to at least partly enclose the elongate member 202. In an example, the cover member 218 may be engaged with the elongate member 202 via an interference fit.

**[0036]** In another embodiment, the porous member 216 may be indirectly disposed in the groove 212. As shown, in such a case, the nozzle 200 may also

include a flange member 220 disposed in the groove 212. The flange member 220 may have a shape that conforms to the shape of the groove 212. Further, the flange member 220 may also define a second hole 222 configured to be axially aligned with the first hole 210. In such a case, the porous member 216 is disposed in the flange member 220. Moreover, the porous member 216 may be attached to the flange member 220 using various methods, such as, for example, using adhesives.

**[0037]** Further, the nozzle 200 may also include a tube member 224 having a first end 226 and a second end 228. The tube member is configured to be in fluid communication with the second hole 222 and the body 302. Moreover, the first end 226 of the tube member 224 may be connected to the flange member 220. Further, the tube member 224 may be axially aligned with the second hole 222. In an example, the flange member 220 and the tube member 224 may be integral to each other and have a unitary construction thereof. The second end 228 of the tube member 224 may be removably received in the first hole 210 defined by the elongate member 202 via a press fit.

**[0038]** In an embodiment, the cover member 218 may include a chamber 230 for storing at least one assembly 232 of the porous member 216, the flange member 220 and the tube member 224. The cover member 218 may also include a cap member 234 configured to open or close the chamber 230. In an example, the cap member 234 may have a hinged connection with one of the top end of the chamber 230 to facilitate opening 308 and closing of the chamber 230. With such an implementation, the flange member 220 along with the porous member 216 and the tube member 224 may be replaced with the assembly 232 of the flange member 220, the porous member 216 and the tube member 224 after usage of the porous member 216.

**[0039]** Additionally or optionally, the body 302 of the applicator 300 may include the chamber 230 for storing one or more assemblies 232 of the porous member 216, the flange member 220 and the tube member 224. Moreover, the chamber 230 may be disposed adjacent to the other end 306A of the body 302. Accordingly, the body 302 may also include a corresponding cap member 234.

**[0040]** Although, the applicator 300 of FIGS. 3 and 4 is illustrated to include one nozzle 200, it may be contemplated that the applicator 300 may include another nozzle 200 disposed on the opposite end 310 of the body 302.

**[0041]** Further, although it is illustrated that each of the second end 208 and the porous member 216 define the groove 212, it may be envisioned that the nozzle may have only one of the second end 208 and the porous member 216 defining the groove 212.

**[0042]** Referring to FIG. 5, the applicator 300 according to another embodiment of the present disclosure is illustrated. In the illustrated embodiment, the body 302 of the applicator 300 has a substantially cylindrical shape. Further, the applicator 300 may include two of the nozzles 200 disposed in fluid communication with the body. In the illustrated example, the second end 208 of the elongate member 202 defines the groove 212 having a substantially U-shape. The porous member 216 may also define a groove of suitable shape. Further, the porous member 216 may be disposed in the groove 212 defined by the second end 208. In another example, the porous member may have a top end having a flat or planar configuration. Moreover, as shown, the nozzle 200 is disposed on each of the ends 306A, 306B of the body 302. As such, the applicator 300 provides two porous members 216 for usage in applying the material on the substrate 100.

**[0043]** Referring to FIG. 6, the applicator 300 according to yet another embodiment of the present disclosure is illustrated. In the illustrated embodiment, the body 302 of the applicator 300 has a substantially square shape having four ends 306. Further, the elongate member 202 and the body 302 may be integral to each other defining the groove 212 therein.

**[0044]** As shown, the groove 212 may have a V-shape. The porous member 216 may be disposed in the groove 212. In one example, the porous member 216 may also have a shape that conforms to the shape of the groove 212. In another example, the porous member 216 may have a flat or planar top end. Further, the applicator 300 may include four nozzles 200 disposed in fluid communication with the body 302. As shown, the nozzles 200 are disposed on the four ends 306

of the body 302. With such an applicator, four porous members 216 may be available for usage in applying the material on the substrate 100.

**[0045]** Referring to FIG. 7, the applicator 300 according to yet another embodiment of the present disclosure is illustrated. In the illustrated embodiment of FIG. 7, the body 302 of the applicator 300 has a substantially conical shape. The applicator 300 includes the nozzle 200 disposed in a fluid communication with the body 302. In the illustrated example, the second end 208 has a flat or planar configuration. Further the porous member 216 defines the groove 212 along the transverse axis 204. In one example, the groove 212 may have a V-shape. In another example, the groove 212 may have a U-shape. The porous member 216 may be disposed on the second end 208. Further, the porous member 216 may be attached to the second end 208 using suitable adhesives or the like.

**[0046]** As shown, the body 302 of the applicator 300 may have a curvature 310 thereof to facilitate a user to hold the applicator 300. Although, the curvature 310 is shown in the applicator 300 of FIG. 7, it may be envisioned to implement a suitable curvature on the applicators 300 of various other embodiments.

**[0047]** Further, it may be contemplated to use different other configurations and shapes for the body such as, polygonal, curved and the like based on a specific type of application.

**[0048]** The nozzle 200 and applicators 300, according to various embodiments of the present disclosure have applicability and use in applying material on various substrates. Moreover, the nozzle 200 and applicator 300 may be used in applying the material simultaneously on any two adjoining surfaces of the substrate 100. Additionally, usage of the porous member 216 with the described configurations of the groove 212, uniformity may be achieved in the material applied on the substrate 100.

**[0049]** A coating is made on the edges of the substrate 100 using the applicator 300, and the thickness of the coating is measured at different points on the edges using digital dial indicator and cross checked with micrometer. Data reports that the thickness is almost uniform with a maximum variation of just  $\pm 2$  microns.

**[0050]** Further, the applicators 300 may be hand-held thereby enabling easy application of the material. Moreover, the nozzle 200 and the applicator 300 may be used for any sizes of the substrate 100 by selecting a suitable configuration and size for the groove 212.

**[0051]** Note that not all of the activities described above in the general description or the examples are required, that a portion of a specific activity may not be required, and that one or more further activities may be performed in addition to those described. Still further, the order in which activities are listed is not necessarily the order in which they are performed.

**[0052]** Benefits, other advantages, and solutions to problems have been described above with regard to specific embodiments. However, the benefits, advantages, solutions to problems, and any feature(s) that may cause any benefit, advantage, or solution to occur or become more pronounced are not to be construed as a critical, required, or essential feature of any or all the claims.

**[0053]** The specification and illustrations of the embodiments described herein are intended to provide a general understanding of the structure of the various embodiments. The specification and illustrations are not intended to serve as an exhaustive and comprehensive description of all of the elements and features of apparatus and systems that use the structures or methods described herein. Certain features, that are for clarity, described herein in the context of separate embodiments, may also be provided in combination in a single embodiment. Conversely, various features that are, for brevity, described in the context of a single embodiment, may also be provided separately or in a sub combination. Further, reference to values stated in ranges includes each and every value within that range. Many other embodiments may be apparent to skilled artisans only after reading this specification. Other embodiments may be used and derived from the disclosure, such that a structural substitution, logical substitution, or another change may be made without departing from the scope of the disclosure. Accordingly, the disclosure is to be regarded as illustrative rather than restrictive.

**[0054]** The description in combination with the figures is provided to assist in understanding the teachings disclosed herein, is provided to assist in describing

the teachings, and should not be interpreted as a limitation on the scope or applicability of the teachings. However, other teachings can certainly be used in this application.

**[0055]** As used herein, the terms "comprises," "comprising," "includes," "including," "has," "having" or any other variation thereof, are intended to cover a non-exclusive inclusion. For example, a method, article, or apparatus that comprises a list of features is not necessarily limited only to those features but may include other features not expressly listed or inherent to such method, article, or apparatus. Further, unless expressly stated to the contrary, "or" refers to an inclusive-or and not to an exclusive-or. For example, a condition A or B is satisfied by any one of the following: A is true (or present) and B is false (or not present), A is false (or not present) and B is true (or present), and both A and B are true (or present).

**[0056]** Also, the use of "a" or "an" is employed to describe elements and components described herein. This is done merely for convenience and to give a general sense of the scope of the invention. This description should be read to include one or at least one and the singular also includes the plural, or vice versa, unless it is clear that it is meant otherwise. For example, when a single item is described herein, more than one item may be used in place of a single item. Similarly, where more than one item is described herein, a single item may be substituted for that more than one item.

**[0057]** Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. The materials, methods, and examples are illustrative only and not intended to be limiting. To the extent that certain details regarding specific materials and processing acts are not described, such details may include conventional approaches, which may be found in reference books and other sources within the manufacturing arts.

**[0058]** While aspects of the present disclosure have been particularly shown and described with reference to the embodiments above, it will be understood by those skilled in the art that various additional embodiments may be contemplated by the

modification of the disclosed machines, systems and methods without departing from the spirit and scope of what is disclosed. Such embodiments should be understood to fall within the scope of the present disclosure as determined based upon the claims and any equivalents thereof.

List of Elements

## TITLE: APPLICATOR

100	Substrate
102	Adjoining surface
104	Adjoining surface
106	Edge
200	Nozzle
202	Elongate member
204	Transverse axis
206	First end
208	Second end
210	First hole
212	Groove
214	Pair of arms
214A	One arm
214B	Another arm
216	Porous member
218	Cover member
220	Flange member
222	Second hole
224	Tube member
226	First end of tube member
228	Second end of tube member
230	Chamber



232	Assembly
234	Cap member
300	Applicator
302	Body
304	Neck portion
306A	One end of body
306B	Other end of body
306	Ends of body
308	Opening
310	Curvature
A	Angle between adjoining surfaces
B	Angle of groove
L1	Length
L2	Length

### Claims

What is claimed is:

1. A nozzle for dispensing a material onto a substrate, the nozzle comprising:  
an elongate member defining a transverse axis, the elongate member comprising:  
a first end; and  
a second end distally located from the first end, and  
a porous member disposed on the second end and fluidly coupled to the elongate member, wherein at least one of the porous member and the second end are configured to define a groove along the transverse axis, and wherein the porous member is configured to apply the material on two adjoining surfaces of the substrate.
2. The nozzle of claim 1, wherein the substrate is a mirror, and wherein one of the adjoining surfaces is a coated surface of the mirror.
3. The nozzle of claim 1, wherein the groove has a U-shape.
4. The nozzle of claim 1, wherein the second end defines the groove along the transverse axis, the groove having a substantially V-shape, and wherein the porous member is disposed in the groove.
5. The nozzle of claim 1, wherein the second end has a substantially planar configuration, and wherein the porous member defines the groove having a substantially V-shape.
6. The nozzle of any one of claims 4 and 5, wherein an angle defined by the groove is in a range of 60 to 120 degrees.

7. The nozzle of claim 1 further comprising a cover member configured to at least partially cover the elongate member.
8. The nozzle of claim 7 further comprising:
  - a flange member removably disposed in the groove, the flange member having a shape that conforms to a shape of the groove, and wherein the porous member is disposed on the flange member; and
  - a tube member fluidly coupled to the flange member and the elongate member, wherein the cover member further comprises:
    - a chamber configured to store at least of an assembly of the porous member, the flange member and the tube member; and
    - a cap member movably coupled to the chamber and configured to open and close the chamber.
9. The nozzle of claim 1, wherein the porous member is made of one of a foam material and a felt material.
10. The nozzle of claim 1, wherein the porous member is made of one of a polyurethane foam, a polystyrene foam, a polyether foam, a phenolic foam, a polyester, a cotton and a cellulose based material.
11. An applicator comprising the nozzle of claim 1 and a body containing the material, the body in fluid communication with the nozzle.
12. An applicator for applying a material on a substrate, the applicator comprising:
  - a body configured to store the material therein; and
  - at least one nozzle in fluid communication with the body, the at least one nozzle comprising:
    - an elongate member defining a transvers axis, the elongate member comprising:

a first end connected to an end of the body; and  
a second end distally located from the first end; and  
a porous member disposed on the second end of the elongate member and configured to be in fluid communication with the body to receive the material therefrom, wherein at least one of the porous member and the second end defines a groove along the transverse axis, and wherein the porous member is configured to apply the material on two adjoining surfaces of the substrate.

13. The applicator of claim 12, wherein the body has one of a polygonal shape, cylindrical shape and a conical shape.
14. The applicator of claim 12, wherein the body has a rectangular shape, and wherein each of the ends of the body comprises the porous member disposed thereon.
15. The applicator of claim 12, wherein the body has a substantially cylindrical shape, and wherein each of the ends of the body comprises the nozzle disposed thereon.
16. The applicator of claim 12, wherein the groove has a U-shape.
17. The applicator of claim 12, wherein the groove has a V-shape.
18. The applicator of claim 17, wherein an angle defined by the groove is in a range of 60 to 120 degrees.
19. The applicator of claim 12 further comprising a cover member configured to at least partially cover the elongate member.
20. The applicator of claim 19 further comprising:

a flange member removably disposed in the groove, the flange member having a shape that conforms to a shape of the groove, and wherein the porous member is disposed on the flange member; and

a tube member fluidly coupled to the flange member and the elongate member, wherein the cover member further comprises:

a chamber configured to store at least an assembly of the porous member, the flange member and the tube member; and

a cap member movably coupled to the chamber and configured to open and close the chamber.

21. The applicator of claim 12, wherein the body is made of one of a polyolefin material and a plastic material.
22. The applicator of claim 12, wherein the body is made of one of a polyethylene, polypropylene, polystyrene, polyvinyl chloride, polyethylene terephthalate, nylocast, delrin, polypropylene, polycarbonate, polyester, thermoplastic polyurethanes, thermoplastic elastomers, polyimide and PEEK.
23. The applicator of claim 12, wherein the porous member is made of one of a foam material and a felt material.
24. The applicator of claim 12, wherein the porous member is made of one of a polyurethane foam, a polystyrene foam, a polyether foam, a phenolic foam, a polyester, a cotton and a cellulose based material.
25. A nozzle for dispensing a material on a substrate, the nozzle comprising:
  - an elongate member comprising:
    - a first end; and
    - a second end distally located from the first end; and

a porous member disposed on the second end, wherein at least one of the second end and the porous member defines a groove of substantially V-shape, and wherein the porous member is configured to apply the material at least partly around an edge of the substrate.

26. The nozzle of claim 25, wherein the substrate is a mirror, and wherein the edge is adjacent to a coated surface of the mirror.

27. The nozzle of claim 25 further comprising a cover member configured to at least partially cover the elongate member.

28. The nozzle of claim 27 further comprising:

a flange member removably disposed in the groove, the flange member having a shape that conforms to a shape of the groove, and wherein the porous member is disposed on the flange member; and

a tube member fluidly coupled to the flange member and the elongate member, wherein the cover member further comprises:

a chamber configured to store at least of an assembly of the porous member, the flange member and the tube member; and

a cap member movably coupled to the chamber and configured to open and close the chamber.

29. An applicator comprising the nozzle of claim 25 and a body containing the material, the body in fluid communication with the nozzle.

30. The nozzle of claim 25, wherein the porous member is made of one of a foam material and a felt material.

31. The nozzle of claim 25, wherein the porous member is made of one of a polyurethane foam, a polystyrene foam, a polyether foam, a phenolic foam, a polyester, a cotton and a cellulose based material.

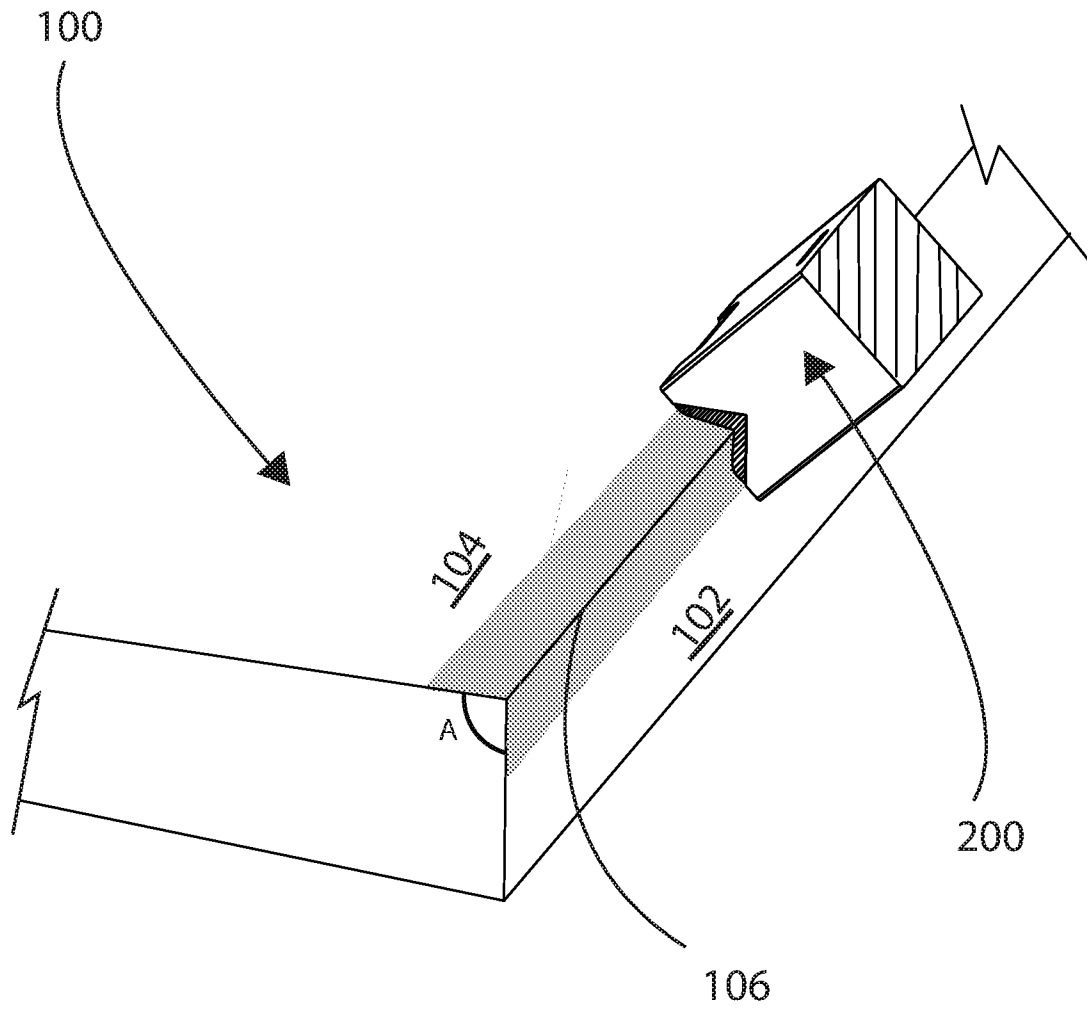


Fig. 1

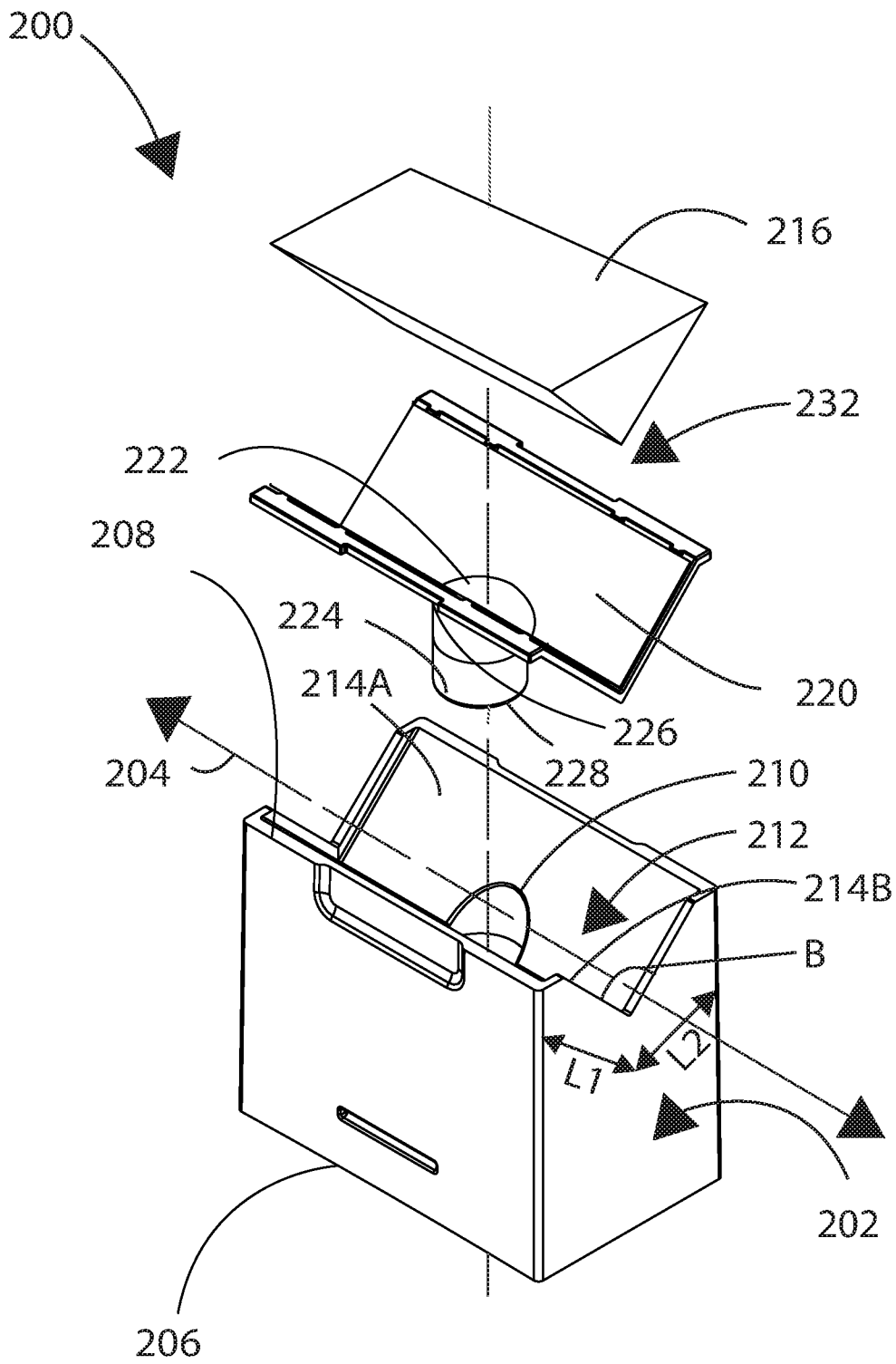


Fig. 2



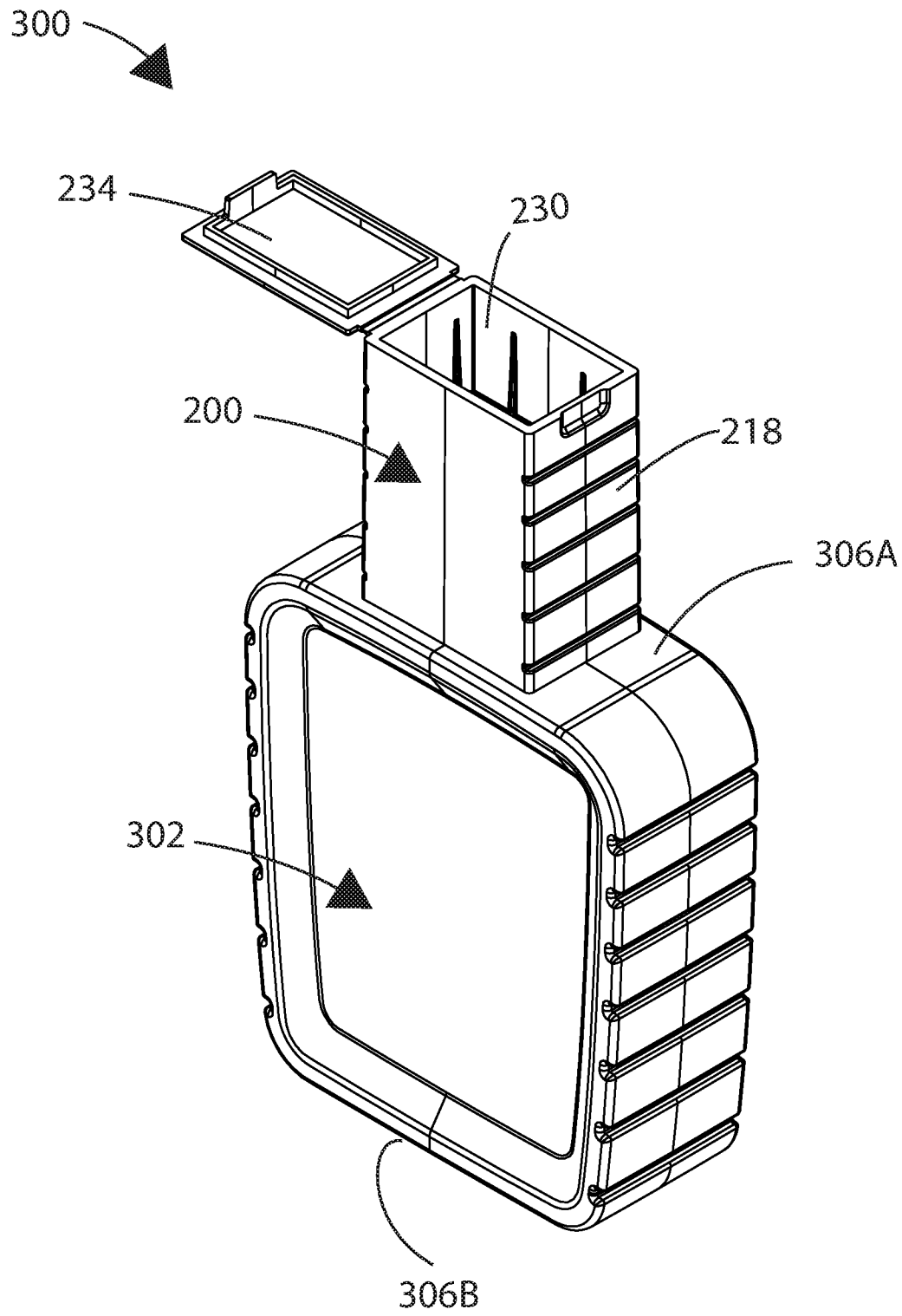


Fig. 3

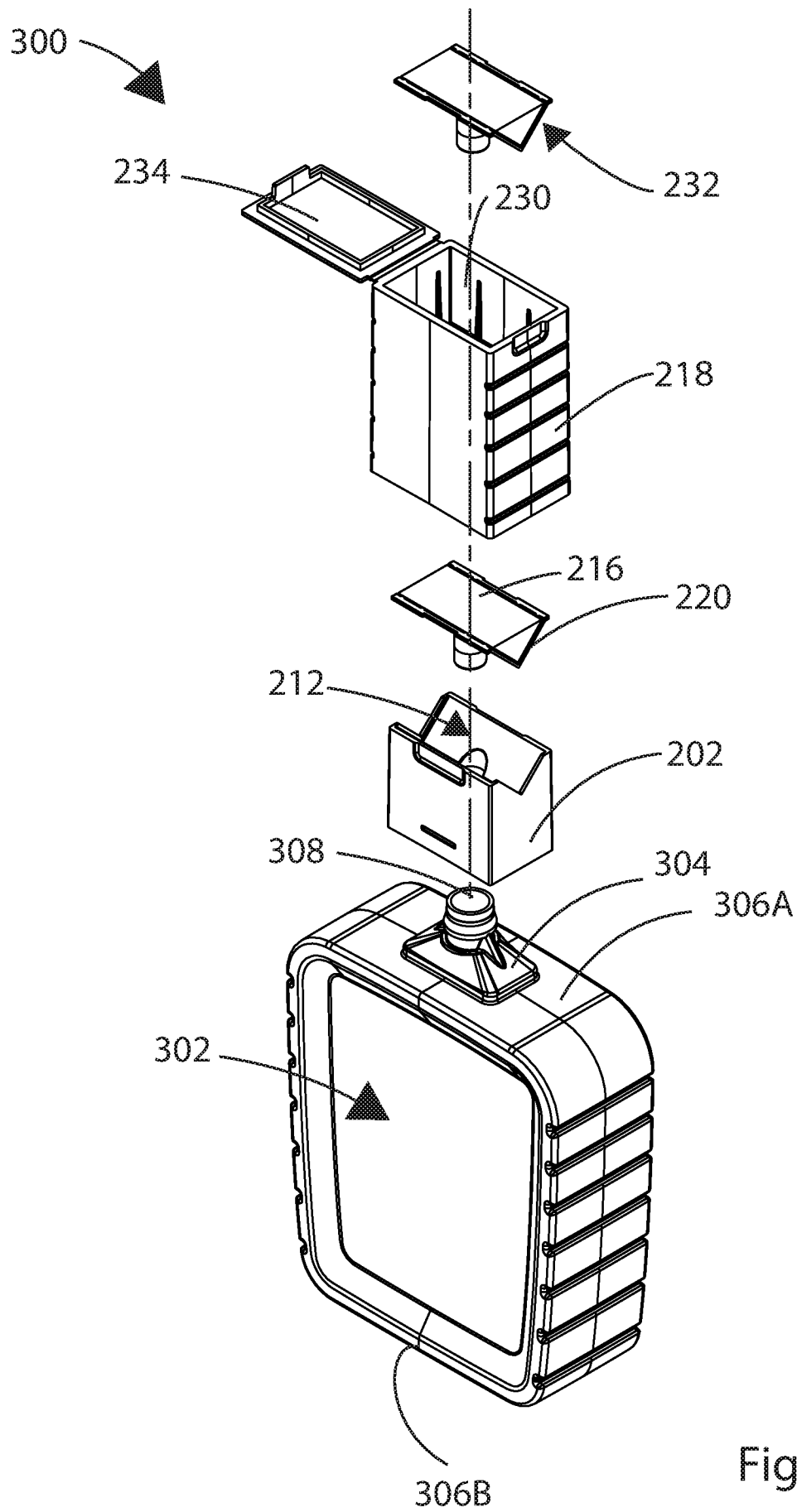


Fig. 4

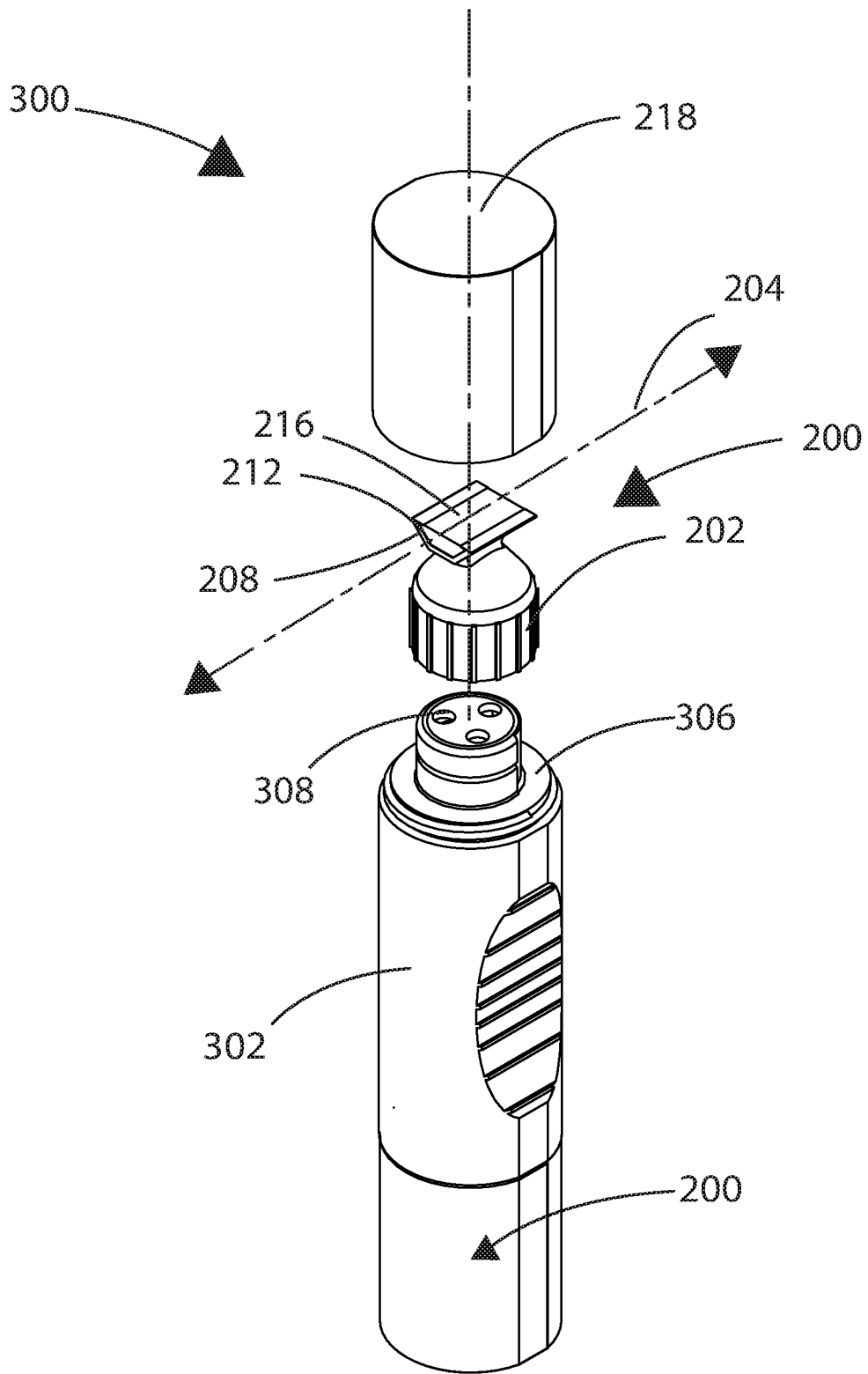


Fig. 5

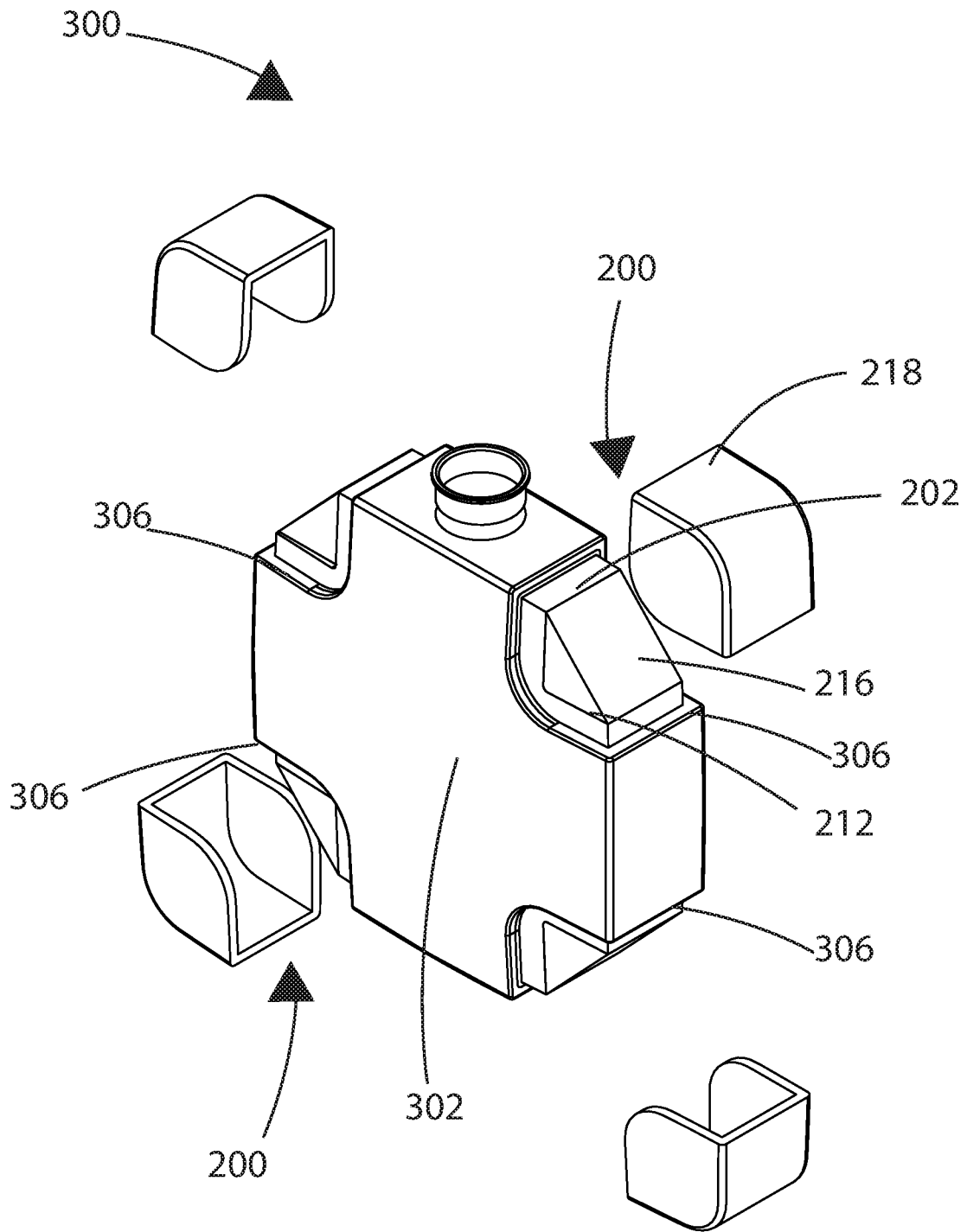


Fig. 6

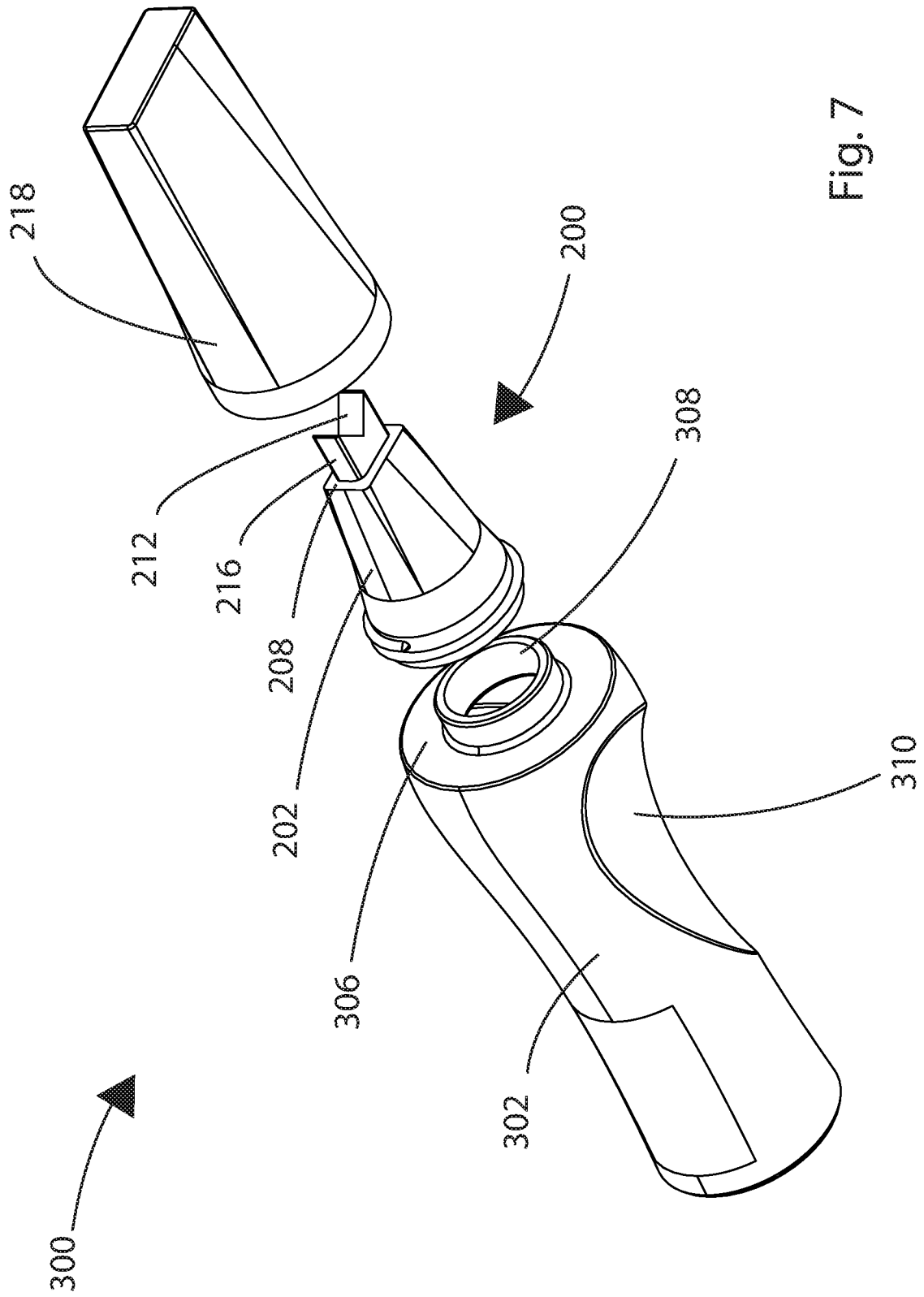


Fig. 7

# INTERNATIONAL SEARCH REPORT

International application No PCT/IB2016/055535
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<b>A. CLASSIFICATION OF SUBJECT MATTER</b> INV. B05C17/00 ADD.				
According to International Patent Classification (IPC) or to both national classification and IPC				
<b>B. FIELDS SEARCHED</b>				
Minimum documentation searched (classification system followed by classification symbols) B05C A61B A46B A61M B65D				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data				
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 2014/003858 A1 (FRAZIER THOMAS G [US]) 2 January 2014 (2014-01-02)	1,3,7, 9-13,16, 19,21-24		
Y	abstract; figures 13,15, 27-30 paragraph [0048] paragraph [0054] paragraph [0058]	2,4,6,8, 14,15, 18,20, 26,28		
X	----- JP S55 12866 U (SUGA, AKIKAZU) 26 January 1980 (1980-01-26)	1,3,5,7, 9-13,17, 19, 21-25, 27,29-31		
Y	the whole document  -----	2,4,6,8, 14,15, 18,20, 26,28		
-/--				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.</td> <td style="width: 50%; border: none;"><input checked="" type="checkbox"/> See patent family annex.</td> </tr> </table>			<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.	<input checked="" type="checkbox"/> See patent family annex.			
* Special categories of cited documents :				
"A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed		"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search	Date of mailing of the international search report			
9 January 2017	19/01/2017			
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Ciotta, Fausto			

# INTERNATIONAL SEARCH REPORT

International application No  
PCT/IB2016/055535

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 755 586 B1 (FRAZIER THOMAS G [US]) 29 June 2004 (2004-06-29) abstract; figure 3 -----	1,9-11

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Information on patent family members

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		JP S5736305 Y2	11-08-1982
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US 6755586	B1	NONE	
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