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(54) **MOLDED-ON APPLICATORS**

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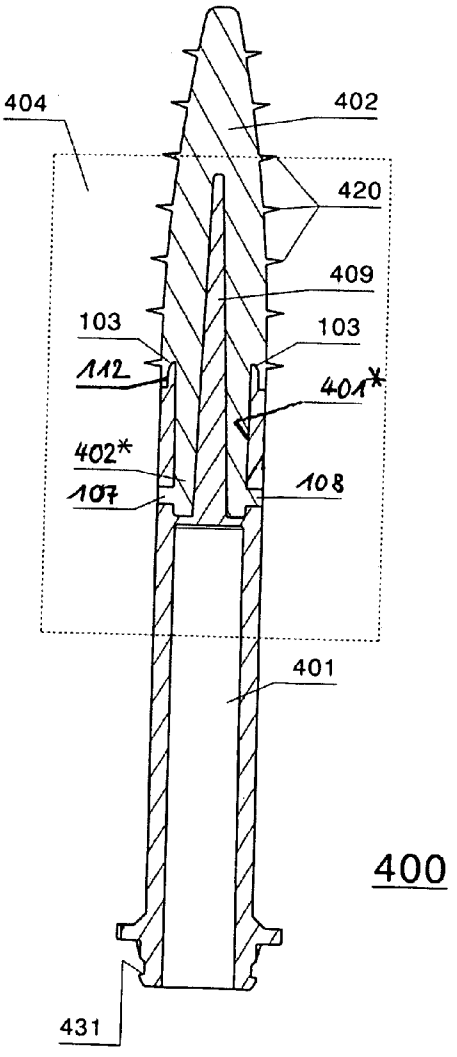
(57) **ABSTRACT**

An applicator comprising a hard component and a soft component injected on to the hard component for forming an application surface (W), wherein both the hard component and the soft component at least in parts comprise plastic material and the plastic material of the hard component is harder than the plastic material of the soft component, a joining region arranged substantially in the interior of the hard component is provided between the hard component and the soft component, wherein the joining region has at least a part of the soft component, the part being arranged in the interior of the hard component, in the form of at least one anchoring element.



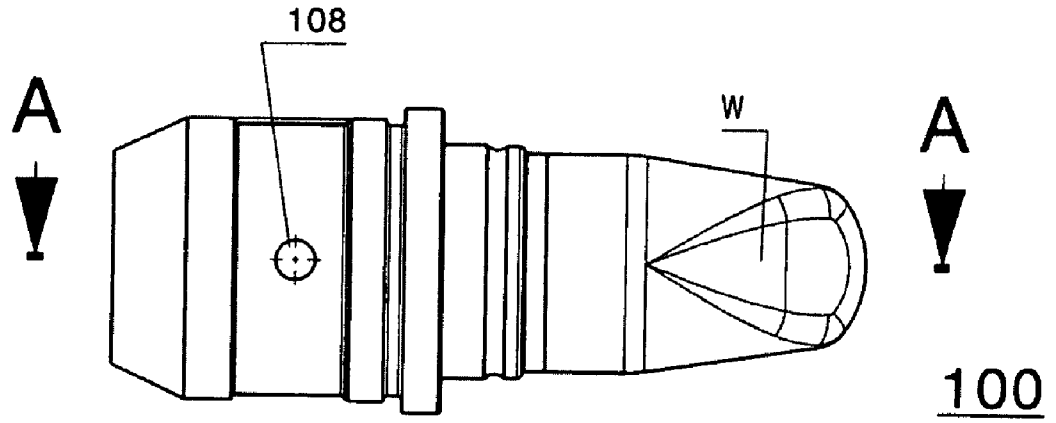


FIG. 1a

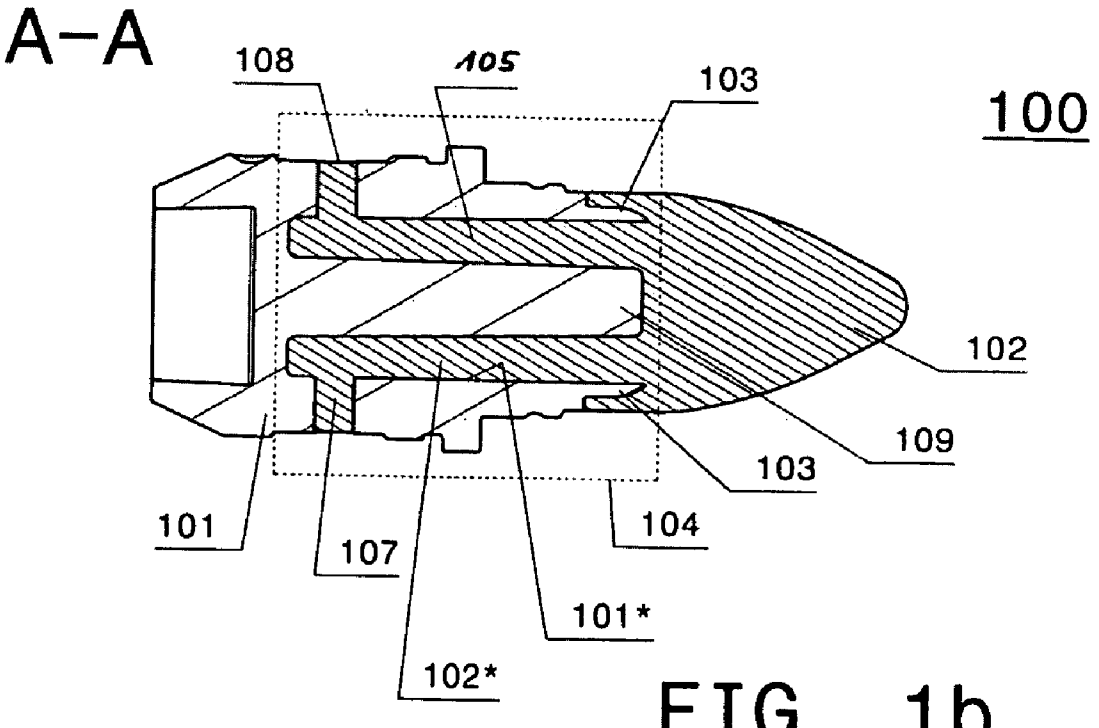


FIG. 1b

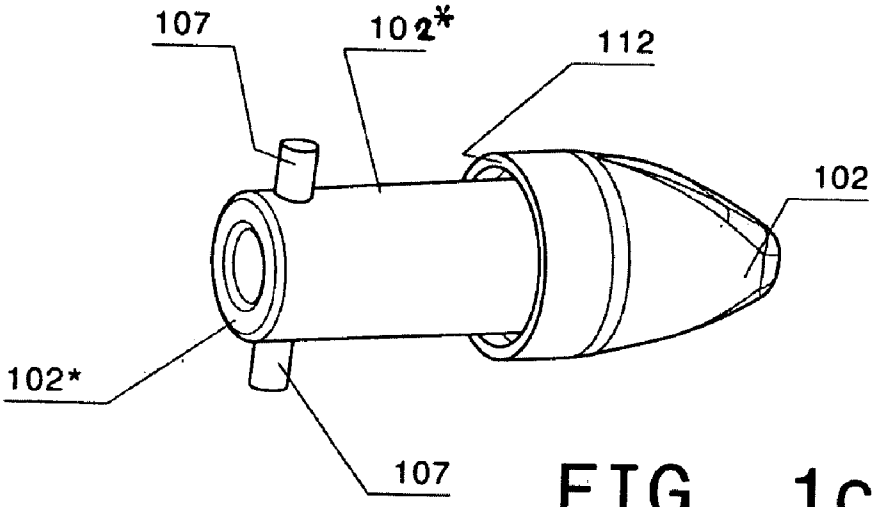


FIG. 1c

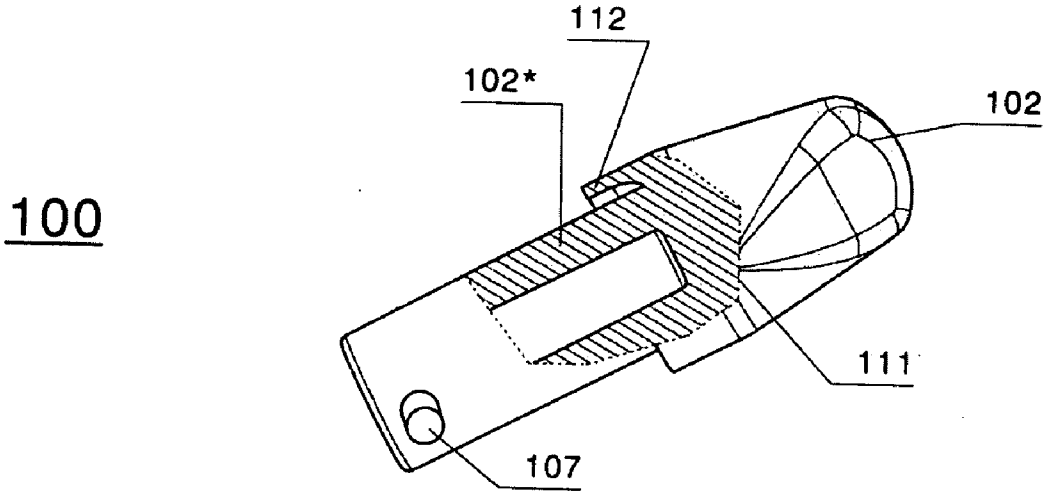


FIG. 1d

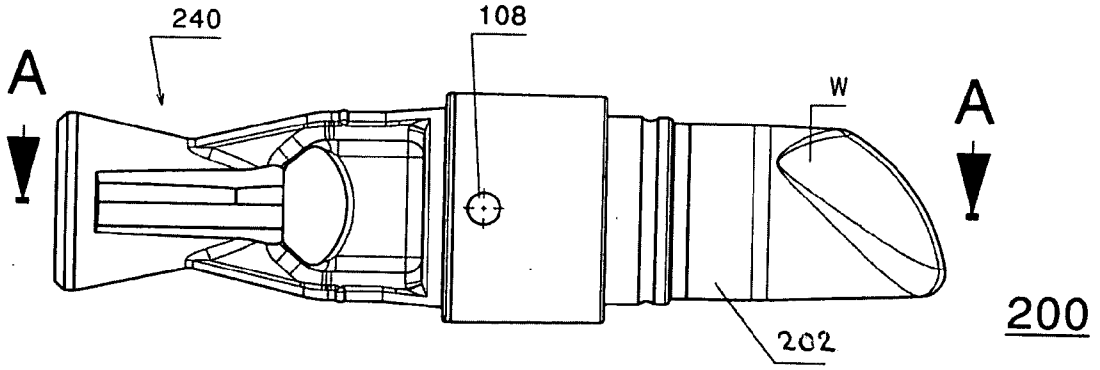

240
108
A
W
A
202
200

FIG. 2a

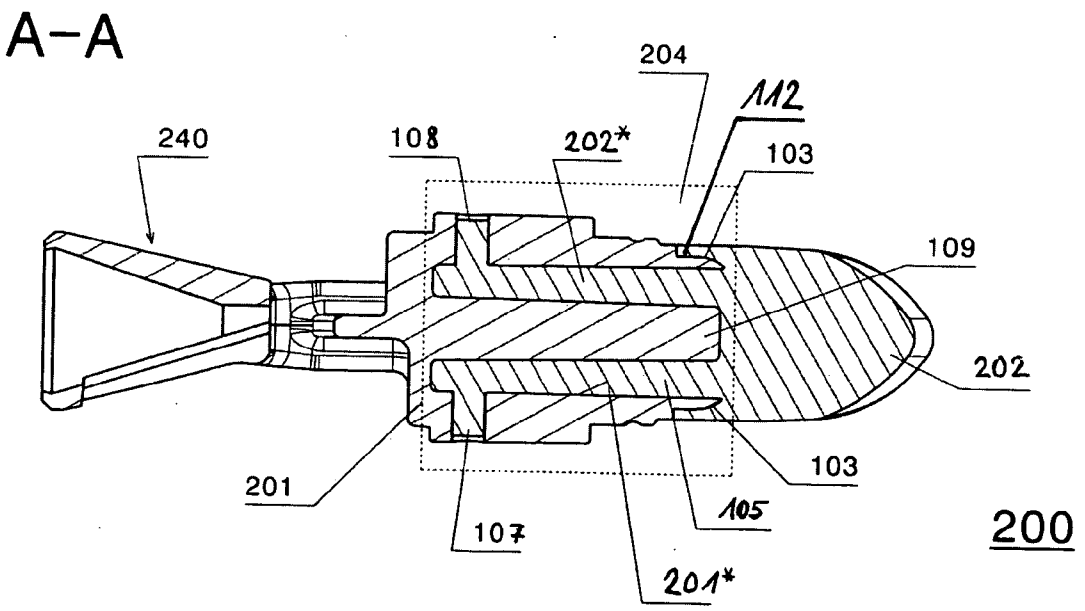

A-A
204
112
240
108
202*
103
109
202
201
103
105
107
200
201*

FIG. 2b

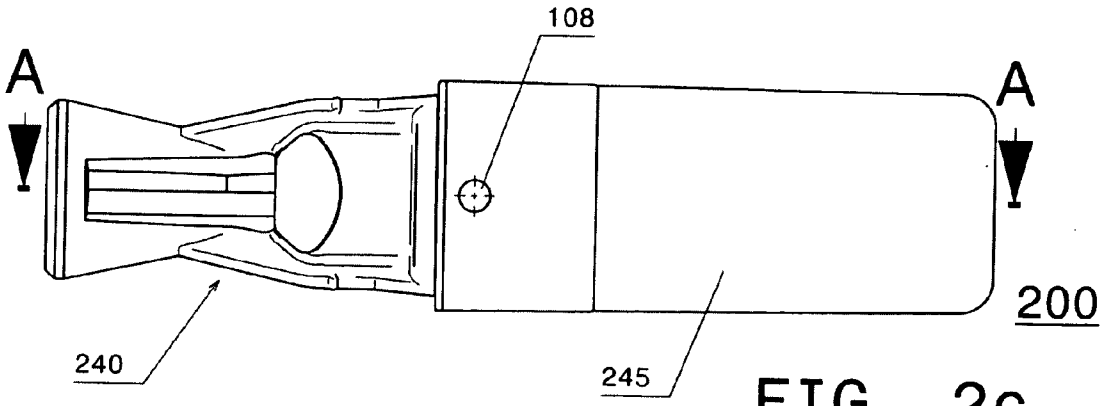

108
A
A
200
240
245

FIG. 2c

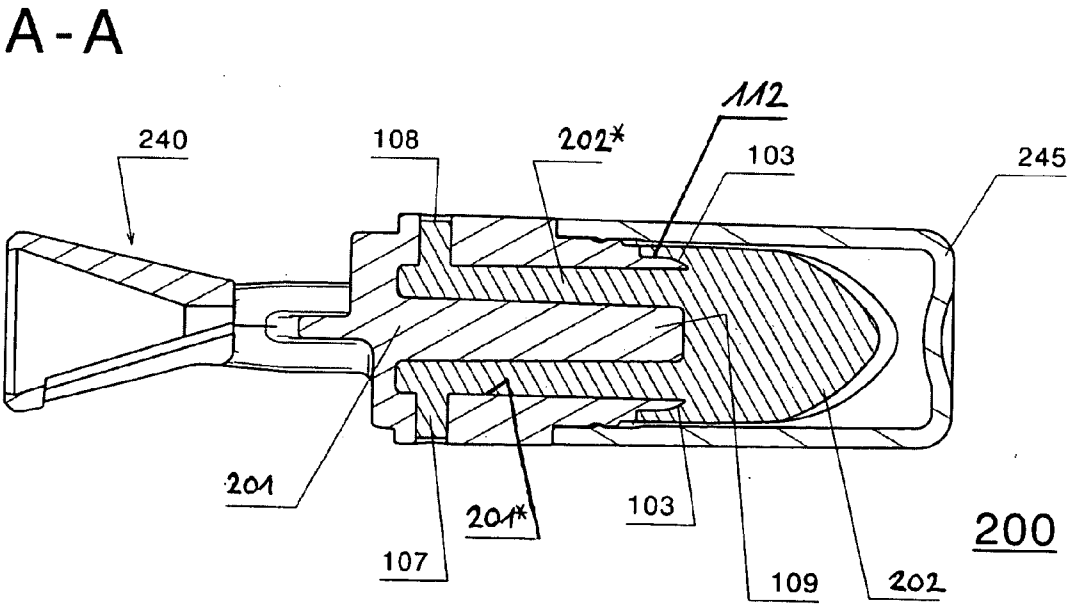

A-A
112
240
108
202*
103
245
201
201*
103
200
107
109
202

FIG. 2d

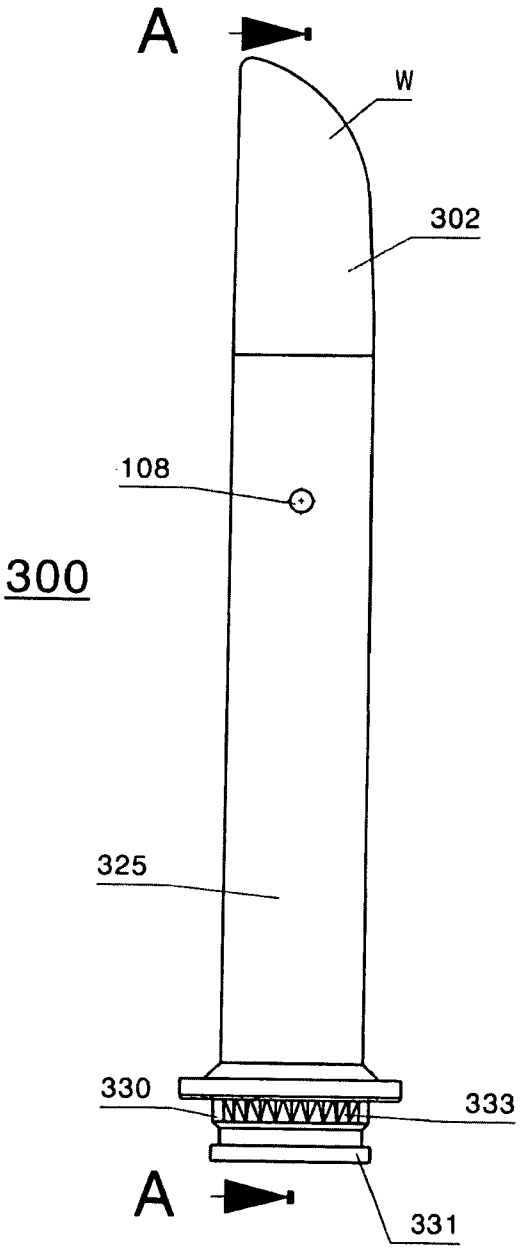

A
W
302
108
300
325
330
333
A
331

FIG. 3a

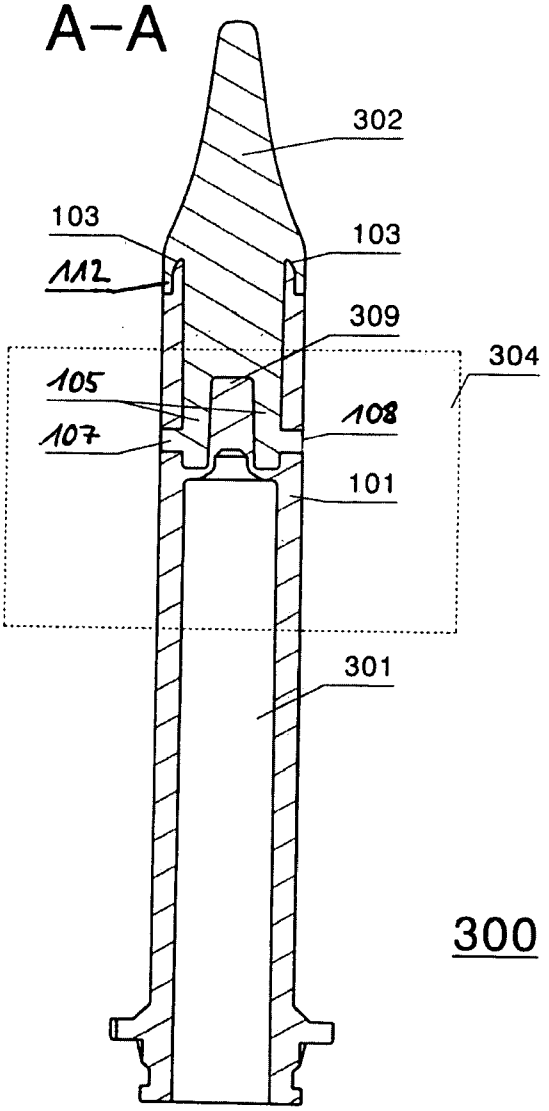

A-A
302
103
103
112
309
304
105
108
107
101
301
300

FIG. 3b

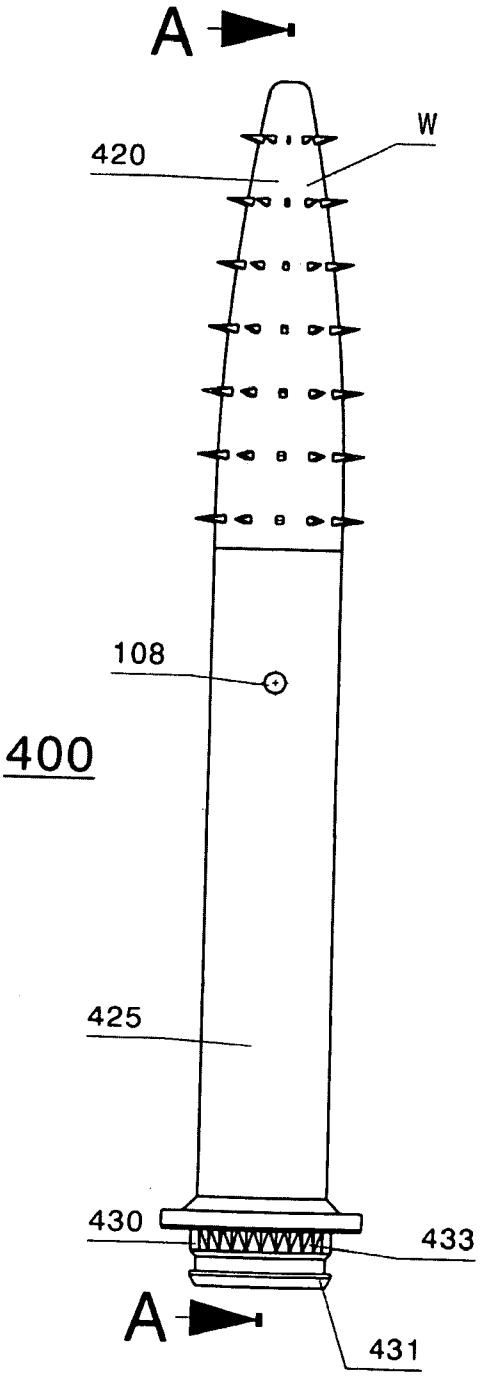

A
W
420
108
400
425
430
433
A
431

FIG. 4a

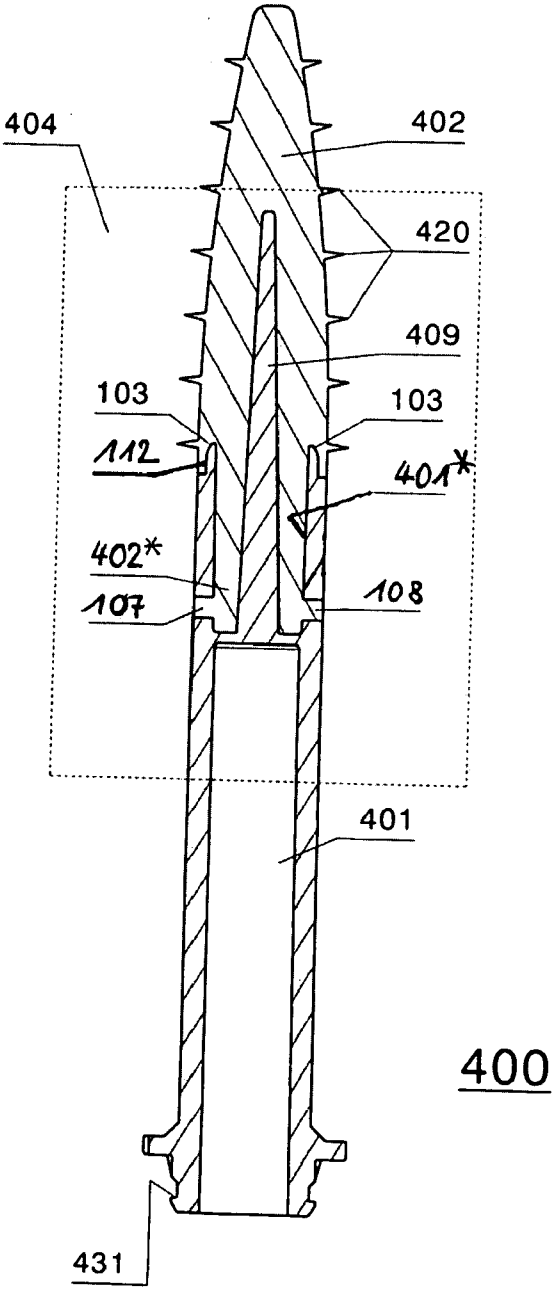

404
402
420
409
103
103
112
401*
402*
107
108
401
400
431

FIG. 4b

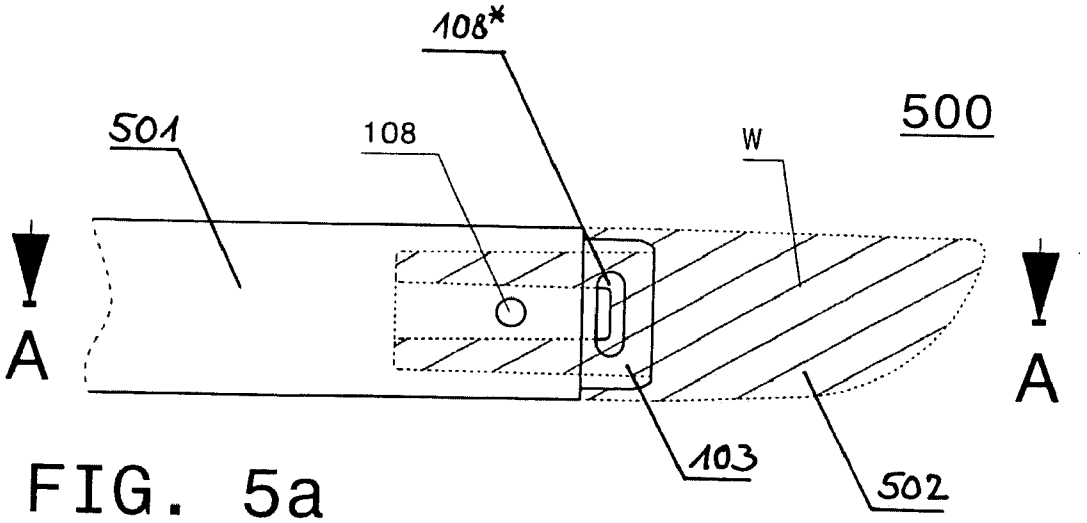

108*
500
501
108
W
A
A
103
502

FIG. 5a

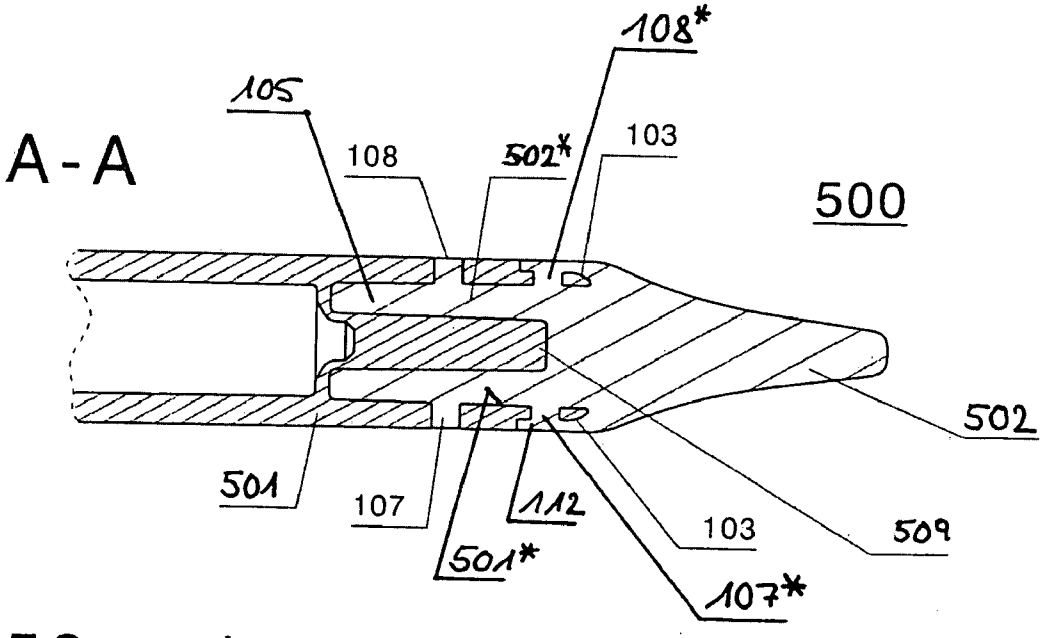

108*
105
A-A
108
502*
103
500
502
501
107
112
103
509
501*
107*

FIG. 5b

MOLDED-ON APPLICATORS

BACKGROUND OF THE INVENTION

[0001] The present invention concerns an applicator comprising at least two components with a better join between the components.

[0002] A preferred use of the applicator is in the field of cosmetic application systems, wherein the applicator is loaded by being dipped into a cosmetic substance in order then to apply it to skin, mucous membrane, semi-mucous membrane, hairs or small hairs and lashes, and to distribute it there.

[0003] Applicators have long been known in the cosmetics industry in the form of mascara brushes, brushes, slender brushes, foam sponges or foam rubber applicators, for example for applying eyelash or hair mascara, liquid lipstick of high viscosity or the like. In principle all kinds of liquid, pasty, gel-like or powder substances fall to be considered as cosmetic substances to be applied. An applicator adapted thereto should be suitable for achieving uniform and specifically targeted application as well as distribution possibly as far as possible at the same time over a relatively large region of the skin or a number of eyelashes.

[0004] An applicator brush for applying mascara is known from for example WO 00/54623. The applicator brush is produced by means of a two-component injection molding process (referred to as the 2C process). That involves injection molding on a flexurally stiff plastic core, as a hard component, radially projecting bristles comprising a softer plastic material as a soft component.

[0005] In the known application devices, that is to say applicators, the part of the soft component serving as the application surface or element is joined to a handle or stem comprising the hard component of the applicator, by means of usual joining procedures. The usual joining procedures include glueing, clamping, for example in a ferrule, attachment involving snapping engagement in latching relationship, and the like.

[0006] Essentially in relation to applicators which are produced by means of two-component injection molding, that is to say using the 2C process, a join is produced between the hard component and the soft component by simply injection molding the soft component around the hard component. To prevent detachment of the soft component which serves as the application surface for the substance to be applied, joining or holding structures are provided in the interface between the two components. These usually involve simple annular grooves or ridges. Nonetheless the join between the two components (hard component and soft component) does not seem to be optimal as for example there have been reports of the soft component becoming detached from the hard component at a scraper provided at the opening of a cosmetic container.

[0007] Known 2C applicators, in particular known joins between soft and hard components, are to be found for example in EP 0 038 524, EP 1 384 417 A2 and U.S. No. 2004/0047676 A1.

SUMMARY OF THE INVENTION

[0008] The object of the invention is to improve the join between the hard component and the soft component and in particular to reduce or eliminate the risk of detachment of the soft component from the hard component.

[0009] That object is attained by an applicator comprising a hard component and a soft component injected on to the hard component for forming an application surface (W), wherein both the hard component and the soft component at least in parts comprise plastic material and the plastic material of the hard component is harder than the plastic material of the soft component, a joining region arranged substantially in the interior of the hard component is provided between the hard component and the soft component, wherein the joining region has at least a part of the soft component, said part being arranged in the interior of the hard component, in the form of at least one anchoring element.

[0010] For that purpose the applicator according to the invention has at least one novel positively locking joining region permitting effective anchoring of the hard component to the soft component. The applicator according to the invention comprises at least a hard component and at least one soft component which is injection molded to the hard component at an end of the applicator, that is to say in the direction of the longitudinal extent of the applicator, for forming an application surface, wherein both the hard component and also the soft component at least in parts comprise plastic material and the plastic material of the hard component is harder than the plastic material of the soft component. A joining region arranged substantially in the interior of the hard component is formed between the hard component and the soft component, wherein there at least a part of the soft component, that is arranged in the interior of the hard component, is provided as at least one joining element.

[0011] In addition, at least one part of the hard component, that is arranged in the interior of the soft component, can be provided as a stabiliser for the soft component and for further improving the join between the soft and hard components. The flexibility of longer soft component configurations can be particularly advantageously adjusted by means of the length of the stabiliser. Therefore the novel joining structure has proven its worth in particular in relation to applicators in which the soft component projects markedly beyond the hard component.

[0012] The decisive difference in relation to the known applicators, in regard to the stabiliser, is that the length thereof can be adjusted in consideration of the functional properties of the applicator on the basis of the particularly effective anchorage according to the invention of the soft component in the hard component alone, as it no longer primarily involves a joining function. In this description therefore the term 'stabiliser' is also to emphasise the primary function of that element. In regard to the notion of the 'adjustable' stabiliser, it is to be observed that adjustment relates to the production process and the implementation of the applicator properties upon production.

[0013] The applicator according to the invention can be used together with a container, for example a small bottle in which a cosmetic substance is stored. To apply the substance the applicator can be dipped into the bottle and the substance contained therein. In that case the surface of the applicator is loaded with the substance. Such systems are generally referred to as dip systems. For that purpose the applicator can be coupled to a handle portion which at the same time forms the closure for the container. In alternative configurations the applicators according to the invention can also be stored in a case or other container and/or can be provided with a cover cap or protective cap and/or a further functional element such

as for example a sharpener for example a kajal or kohl pencil or lipliner and added to a cosmetic product such as eyeshadow or a powder.

[0014] The production of an applicator according to the invention is effected by means of at least one injection machine for injecting a soft component of the applicator on to a hard component, wherein the following steps are possible: injecting the soft component at least one injection point through at least one lateral opening which for example is in the region of the periphery in the hard component, wherein the soft component is injected by way of at least one passage extending in the interior of the hard component from the at least one lateral opening to an end of the hard component so that at least one joining element is formed between the hard component and the soft component for a join between the two components substantially by the part of the soft component, that is in the interior of the at least one passage, as a positively locking anchorage.

[0015] In other words, at least one joining element between the hard component and the soft component for joining the two components is produced essentially by the part of the soft component, that is in the interior of the at least one passage, to provide a positively locking anchorage effect.

[0016] The injection point can thus be particularly advantageously disposed in a region outside the operative surface of the applicator, that is to say the application surface, and in particular in the rearward region in relation to the application end of the applicator, that is to say a region of the applicator, that is not visible. The aforementioned object regarding the production process is thus attained by producing the joining region according to the invention, that is to say the anchorage or joining effect between the hard and soft components. Particular emphasis is to be placed on the operation of injection molding the soft component to the hard component from the interior out of the hard component.

[0017] The implementation according to the invention of the joining region, in particular the at least one joining element provided in the interior of the hard component, and the production process according to the invention provide for particularly effective anchoring in positively locking relationship, besides the usual fusion of the two components, in an edge zone of their mutual interfaces. In addition that configuration permits an extremely great degree of freedom in respect of shape in the design configuration of the applicators as a large number of applicators which differ in respect of shape and surface structure can be injection molded on to the same hard component portion by simply changing the molding tool for the soft component. Equally the reverse situation, that is to say different hard component portions for the same applicator, can easily be implemented if the position of the injection point or points and the arrangement of the joining region that is in the interior of the hard component, that is to say the joining or anchoring element, is not changed in relation to the applicator. Accordingly that also affords maximum variability in regard to the hard component portions.

[0018] In a given embodiment disposed in the hard component is at least one opening for injection molding of the soft component thereto and/or for venting purposes in the injection molding procedure, in the proximity of the end of the anchoring element that is in the interior of the hard component. After the operation of injecting the soft component the at least one opening is also filled with the soft component so that the soft component forms an additional anchoring means in the form of a small bar portion, in this description also referred to as the joining bar portion.

[0019] In a particular development provided in the hard component is at least one aperture for at least one anchoring means in leg form which is afforded by the soft component, in this description also referred to as the anchoring leg. The at least one anchoring leg represents a join between the part of the soft component, that is in the interior of the hard component, and a part of the soft component, that is arranged at the outside surface of the hard component. Accordingly the essential difference in relation to an anchoring bar portion of the above-mentioned embodiments is that an anchoring leg formed by means of the soft component can extend through or around the aperture in the hard component, similarly to the links of a chain, that is to say an anchoring leg of such a configuration between the soft component and the hard component produces a positively locking join which can only be released by being destroyed. A particular advantage of one or more such anchoring legs, for example directly in the outer transitional region between the soft component and the hard component, is that in that way it is possible to specifically and targetedly prevent partial detachment of the soft component from the hard component.

[0020] An advantageous development of the invention provides that the anchoring of the soft component in the hard component is further improved by a part of the hard component projecting into the soft component, that is to say extending into the soft component.

[0021] In another advantageous development there are additional functional elements for the end consumer, such as for example the above-mentioned sharpener for a kajal or kohl pen or lipliner, in the rear region of the applicator, that is to say the side remote from the application region.

[0022] In connection with dip systems, that is to say cosmetic products in which the cosmetic to be applied is disposed in a container into which the applicator is dipped and in which the applicator is disposed in the closed condition in the interior of the container, it has proven to be advantageous for the soft component not to be used for a gas-tight defining function upon closure of the container. In particular it is advantageous to ensure that in the closed condition no pressure drop occurs between the application surface which is disposed in the interior of the container, and the outside world. In that way, migration of constituents of the cosmetic substance into the material of the applicator or by way of the joining region out of the container can be avoided.

[0023] In the case of application systems such as the above-mentioned dip systems, the applicator according to the invention can form a part of a closure for liquid-tight and/or gas-tight closure of the system. So that volatile constituents cannot be discharged from the storage means for the cosmetic substance, the required sealing function can be achieved by selecting a suitable material for the hard component. In other words, the soft component is not used in relation to the sealing function. In that way the material of the soft component can be selected solely from application points of view such as for example in respect of hardness, elasticity, given surface properties in relation to the substance to be applied or the kind of skin or hair to which the cosmetic is to be applied and so forth. The material of the hard component can in turn be so selected that the required sealing function can be achieved by the contact surface between the container and the hard component producing adequate sealing integrity for the gas space when the container is closed.

[0024] Depending on the respective use involved different geometrical arrangements and dimensions of knobs, bristles, slats, lines, grooves, bars, wave portions, honeycomb configurations, cups, projections, rings, erosion, milled or knurled structures or the like as well as any combinations of those structural elements are possible as the surface structure of the soft component. Those structures can be of an irregular or regular configuration. A large number of application surfaces can thus be produced, from those with a closed surface to those with an open-pore surface, as is found for example in a sponge applicator.

[0025] The geometrical configuration of the soft component in itself can also be designed in many different ways, for example in wedge form, of a spherical form, of cylindrical form, with or without (flat) application surfaces (flattened portions), with a ball segment, of a projectile-like shape or in the form of a cone tapered towards the tip, or of any other design shapes, depending on the respective ergonomical and design aspects involved.

[0026] The production of an applicator according to the invention provides that, using the two-component injection (molding) procedure or the 2C procedure, the soft component is injected on to the hard component by at least one injection machine, or is injected entirely or partially therearound. The degree of flexibility of the soft component can be freely adjusted by way of the choice of the plastic material for the soft component without basically causing difficulties with the production process. Furthermore the disadvantages of complicated and expensive production and microbiological stressing do not occur as the operation of injecting the plastic material of the soft component on the hard component is effected under conditions and temperatures which are fatal to microorganisms.

[0027] In that respect it is not conclusive for the hard component to be produced exclusively from plastic material entirely in the preceding injection operation. It is equally possible, prior to injection of the hard component, for at least one insert portion for example of metal, wood or thermosetting material or a prefabricated latching or coupling element for subsequent coupling to a pin, handle portion or a closure portion, serving as a handle portion, of a container or the like, to be placed in the injection machine so that, during the injection operation, that is to say while the plastic of the hard component is being injected therearound, a composite molding is produced. It is also possible to guarantee freedom from germs for the applicator as microorganisms which are possibly introduced into the injection machine with the insert portion are killed off when the plastic material of the hard component is injected therearound. The same applies to the operation of injecting the soft component.

[0028] A further advantage of the configuration according to the invention of the join between the hard and soft components is that the contact area between the two components is additionally enlarged in comparison with the known designs, by virtue of the positively locking anchoring of the soft component in the interior of the hard component.

[0029] With suitable combinations of materials, a joining layer in the form of a mixed layer consisting of the two materials can be formed in the injection operation, between the soft component and the hard component. Then, besides the positively locking anchoring engagement, there is additionally a join between the hard component and the soft component, that involves intimate joining of the materials concerned. The mixing layer further provides that the soft component can no longer be detached from the hard component without inflicting serious damage, or with extreme difficulty.

[0030] The above-mentioned mixing effect can be enhanced, depending on the materials involved, by the operation of injecting the soft component on to the hard component being effected after the injection operation for production of the hard component, prior to complete cooling thereof to ambient or room temperature. A desirable processing temperature for the material of the hard component is between 30° C. and 80° C. and preferably between 60° C. and 80° C. That corresponds to a preferred cooling time after the operation of injecting the hard component in dependence on the material thickness of the hard component and the ambient temperature of between about 10 s and about 25 s. With other materials however the operation of injecting the soft component on to the hard component can also be effected at a lower processing temperature (5° C. or less). At any event the choice of the processing temperature which is appropriate in dependence on the materials involved can provide that the hard component, when injecting the soft component thereonto, is selectively melted to a greater or lesser degree, and it is thus possible to adjust the thickness of the mixing layer. A mixing layer thickness of between 1/100 mm and some 1/10 mm has proven to be advantageous. The hard component can also be optionally pre-heated prior to the operation of injecting the soft component thereon. The operation of forming the mixing layer can thus be controlled independently of production of the hard component and in principle can also be applied to insert portions of thermoplastic material or the like.

[0031] In an advantageous embodiment the material for the soft component is a plastic material from the group which comprises a thermoplastic elastomer (TPE). This can involve for example a block copolymer comprising blocks of different monomers. In that way plastic materials of different properties can be produced by virtue of the possible variations in chemical composition and 'architecture' of the molecular chains. By virtue of the insolubility of the individual sequences of the chains, agglomerates or physical networks of the individual units are formed in the plastic material. That category includes for example styrene block copolymers, styrene elastomers (PTE-S), vulcanised polyolefin elastomers (PTE-V), polyolefin elastomers (PTE-O), polyamide elastomers (PTE-A), polyurethane elastomers (PTE-U) and polyester elastomers (PTE-E). Plastic materials from the group of true elastomers such as for example nitrile rubber, silicone rubber and styrene butadiene rubber are also suitable.

[0032] Alternatively it is also possible to use a TPE blend comprising a thermoplastic matrix and elastic particles. The material can be processed like a thermoplastic material, by melting of the matrix, the elastic particles impart its elastic suitability for use to the plastic material. What is important in that respect is good thorough mixing and adhesion of the matrix to the particles. That kind of material includes PP-EPDM, PP-NR, PP-IIR blends or polyolefin thermoplastic materials as a PP-EPM blend.

[0033] Using a suitable TPE material makes it possible to achieve a great band width in terms of mechanical, haptic, optical, dynamic or wetting properties, such as for example a wide range in respect of hardness, temperature resistance, resistance to deformation, resistance to oil, resistance to hydrolysis, weather resistance, processibility, adhesion to the plastic materials of the hard component, colorability, damping, strength, abrasion and the like.

[0034] In regard to the materials for the hard component it should be noted that here basically any material which affords adequate hardness, that is to say mechanical stability, for functioning as a carrier of the soft component, is appropriate. In connection with the 2C process which is preferred here, suitable materials for the hard component are in particular plastic materials from the group of thermoplastics. That category includes for example polypropylene (PP), polyamide (PA), polystyrene (PS), acrylonitrile butadiene styrene copolymers (ABS), polyoxymethylene copolymers (POM-C), polycarbonate (PC), polybutylene terephthalate (PBT), polyphenylene ether (PPE) or polyphenylene sulfide (PPS). It will be appreciated that it is equally possible to use other materials which have equivalent properties.

[0035] It should basically also be pointed out that the hard component can in principle also comprise any other 'hard' material on which, in production of the applicator described herein, the soft component is injection molded as an application element, by the method according to the invention, and a join is thus formed between the soft component and the hard component in accordance with the basic idea of the invention.

[0036] Further advantageous developments of the invention are set forth in the respective appendant claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0037] Further objects, features and advantages of the invention are described in greater detail hereinafter by means of embodiments by way of example with reference to the accompanying drawings in which:

[0038] FIGS. **1***a*-**1***d* show a first embodiment of an applicator according to the invention,

[0039] FIGS. **2***a* and **2***b* show a second embodiment of an applicator according to the invention with a sharpener as an additional functional element,

[0040] FIGS. **2***c* and **2***d* show a development of the second embodiment with a protective cap for the application surface,

[0041] FIGS. **3***a* and **3***b* show a third embodiment of an applicator according to the invention with a hard component in stick form and a shortened stabiliser,

[0042] FIGS. **4***a* and **4***b* show a fourth embodiment of an applicator according to the invention with knobs on the soft component and a hard component in stick form and an increased-length stabiliser, and

[0043] FIGS. **5***a* and **5***b* show an advantageous development as a fifth embodiment of an applicator according to the invention with a further or alternative anchorage form in the proximity of the transitional region between the soft and hard components.

DETAILED DESCRIPTION

[0044] Reference will now be made to a more detailed description of the embodiments by way of example, with reference to the Figures of the drawings.

[0045] FIGS. **1***a* and **1***b* show approximately on a scale of 5:1 an applicator **100** according to the invention, in accordance with a first embodiment. FIG. **1***b* is a view of the section plane A-A of the applicator **100** of FIG. **1***a*. Without adversely affecting the essential object of the improved join between the hard component **101** and the soft component **102**, the injection attachment point of the soft component **102** is displaced in a region outside the operative surface of the applicator **100**, that is to say the application surface W. That region can be in particular the rearward region, preferably a region of the applicator **100**, that is not visible on the end product.

[0046] The displacement of the injection point to at least one lateral opening **108** away from the surface of the soft component is achieved by the specific configuration of the operation of injecting the soft component **102** on to the hard component, as is shown in FIGS. **1***a* and **1***b*. The injection point can particularly advantageously be provided rearwardly in relation to the application surface W, that is to say at the end of the hard component **101**, that is opposite to the soft component. Usually the coupling region of the applicator with for example a handle portion or a closure for a container is at that end.

[0047] In the configuration shown in FIGS. **1***a* through **1***d* the operation of injecting the soft component on the hard component is effected through the at least one lateral opening **108** in the region of the periphery of the hard component **101**. The external shape of the periphery of the hard component **101** in the Figures is circular. The peripheral shape however does not necessarily have to be circular but in principle the periphery can be of any desired configuration, for example oval, but also in the form of a polygon.

[0048] As FIG. **1***b* shows disposed in the joining region **104** between the hard component **101** and the soft component **102** is at least one passage **105** which is of a tubular configuration, as can be clearly seen from the soft component which is shown on its own in FIG. **1***d*. Thus, for making the join, the passage **105** is disposed in the hard component **101**, as a tubular first joining element **101*** in the form of a tubular recess. After the operation of injecting the soft component in place, the passage **105** is filled with a corresponding second joining element **102*** comprising the material of the soft component **102**, which is then necessarily also of a tubular shape. The join thus comprises a telescopic, positively locking join between the two components **101**, **102**. The joining elements **101***, **102*** which are virtually fitted one into the other thus afford a highly loadable join.

[0049] As will also be shown by reference to the following description of further embodiments, the join according to the invention permits use-related adjustment of the length of a stabiliser **109**. Anchorage of the soft component in the interior of the hard component is still further safeguarded against detachment by the material in the at least one lateral opening **108**. The transitional region between the hard and soft components **101**, **102**, which is necessarily of a particularly large area for affording a secure join in the case of the known 2C applicators, can be of almost any small size, in the applicator according to the invention. That minimal annular transitional region is identified by reference **103** in FIG. **1***b*.

[0050] It will be appreciated that, instead of one, it is possible to provide two or more openings **108** for the attachment injection operation, that is to say injection points. In an advantageous development there are provided further openings as a join from the passage **105** outwardly in order to permit venting of the passage **105** in the operation of injecting the soft component to the hard component. The venting openings provide that air in the hard component can be completely displaced in the operation of injecting the soft component thereonto and thus the passage **105** which is in the interior of the applicator **100** is completely filled with the soft component. That also avoids the air in the passage **105** not leading to deformation of the surrounding material, as a consequence of the compacting effect.

[0051] FIG. **1***b* shows a cross-section through the configuration of the applicator **100** in FIG. **1***a*. It is possible to clearly see two diametrally opposite openings **108** of the hard component **101**. Those openings **108** serve as injection points for injecting the soft component **102** to the hard component, in manufacture of the applicator **100**. The openings **108** for injection of the soft component, besides their primary function, also serve for simultaneously improving the anchoring relationship of the soft component **102** in the hard component **101** as, after hardening or solidification of the soft component **102** in the openings, bar portions **107** are formed, which have an additional positively locking anchoring action. In developments, such additional anchoring means can also be afforded by other structural elements produced by the soft component **102**, such as for example claws or prongs. The idea in principle of those anchorage elements involves the hardened soft component **102** engaging radially behind parts of the hard component **101**, in relation to the longitudinal axis of the applicator.

[0052] In a development of the present invention the anchorage of the soft component **102** in the hard component **101** can be still further improved if, besides the bar portions **107** shown in FIGS. **1***a* through **1***d*, parts of the hard component **101**, in the form of for example claws or the stabiliser **109**, additionally protrude into the soft component **102**.

[0053] The arrangement of the stabiliser **109** can be concentric or eccentric with respect to the longitudinal axis of the applicator **100**. It is also possible to provide here a plurality of claws, bar portions or other structural elements on the hard component **101**, which promote a permanent join between the hard component **101** and the soft component **102**. In addition it is also conceivable for the parts of the hard component, that extend into the soft component **102**, like the stabiliser **109**, in turn to have additional further structural elements such as for example claws, bar portions **107**, protrusions in nipple form or a combination thereof in order still further to promote the anchoring effect between the two components or to enlarge the interface area and thus the adhesion between the hard component **101** and the soft component **102**.

[0054] FIGS. **1***c* and **1***d* show the hardened soft component **102** on its own. In that respect the bar portions **107** serving as anchors can be very clearly seen in FIG. **1***c* while the very small transitional region, which is external on the applicator, in the form of an annularly peripherally extending lip **112**, can be clearly seen from FIGS. **1***c* and **1***d*. FIG. **1***d* also shows a cut-away view at the soft component **102** (the dotted cut-away line is identified by reference **111**). Attention is also directed here to the second joining element **102*** which can be clearly seen in FIGS. **1***c* and **1***d*.

[0055] The join according to the invention which, in comparison with known designs, is displaced substantially into the interior of the hard component **101** in the joining region **104**, permits a high degree of freedom in regard to the design configuration of the applicator **100**. Thus a large number of different applicators can be fitted by injection molding to the same hard component part, by simply changing the molding tool for the soft component **102**, so that the applicators can differ in respect of the shape and surface configuration of the soft component. It is also possible to produce different configurations for the hard component, with the soft component being of the same configuration. It will be appreciated that this also includes variations in both the soft component and also the hard component. In that respect it is only the position of the injection points that should not be altered.

[0056] The outside surface of the soft component **102** can be partly or completely provided with a surface structure having a plurality of structural elements. Such structural elements can include for example knobs **420** (FIG. **4***b*) but also bristles, bar portions or other known structural elements and any combination thereof are also possible.

[0057] In addition it is even possible to provide additional functional elements for the user in the rear region, that is to say the side remote from the application region, as in the case of the second embodiment of the present invention shown in FIGS. **2***a* through **2***d*. By way of example the applicator **200** shown in FIG. **2***a* and in the sectional plane A-A in FIG. **2***b* has an additional functional element in the form of a sharpener **240** for example a kajal or kohl stick or a lipliner.

[0058] FIG. **2***b* once again shows the minimal outwardly disposed transitional region **103**. Thus, for making the join, the hard component **201** contains the passage **105** as a tubular first joining element **201*** in the form of a tubular recess which, after the soft component is injected to the hard component, is filled with a corresponding second joining element **202*** of the material of the soft component **202**.

[0059] In addition, the use of a protective cap or a protector **245** for the applicator **200**, as shown in FIG. **2***c* and also in the sectional plane C-C in FIG. **2***d*, is particularly easy to implement. The protector **245** serves primarily to prevent handbags and makeup bags being contaminated by applicators which are already in use. When applicators are in use, residues of the cosmetic material or substance are usually to be found on the application surface W of the applicator **200**. The protector **245** however protects the applicator from soiling and mechanical damage.

[0060] To improve the hygiene conditions, the cover cap or the protector **245** can be produced in the same injection machine or in a second injection machine arranged near the first injection machine for the applicator **200**, preferably at the same time as the operation of injecting the soft component **101** on the hard component. In a particularly preferred feature the cover cap or the protector **245** is fitted in a further method step in the same injection machine on the soft component **102** after the soft component **102** has been injected in place in order in that way to minimise the time in which contamination with germs would be possible. Alternatively the cover cap or the protector **245** is fitted on to the soft component **102** on an assembly device between the injection machine for the applicator **200** and the second injection machine for the cover cap **245**.

[0061] A third and a fourth embodiment of a respective applicator **300**, **400** is shown in FIGS. **3***a*, **3***b* and FIGS. **4***a*, **4***b* respectively. In this respect FIGS. **3***b* and **4***b* each show a cross-sectional view of the section planes A-A of FIGS. **3***a* and **4***a* respectively. The respective parts comprising the hard components **301** and **401** respectively are in the form of a stick **325** and **425** in both embodiments. To form the join, provided in the respective hard component **301** and **401** is the at least one passage **105** as the tubular first joining element **301*** and **401***, in the form of a tubular recess, the passage being filled after the operation of injecting the soft component on to the hard component with the corresponding second joining element **302*** and **402*** comprising the material of the soft component **302** and **402** respectively.

[0062] To couple the stick **325** and **425** to a handle portion or container closure (not shown), a respective latching coupling **330** and **430** with an annularly peripherally extending snap-action nose **331** and **431** is provided at the end of the

stick **325** and **425**, that is in opposite relationship to the soft component **302** and **402**. Additional tooth structures **333** and **433** for positively locking meshing engagement with the closure or handle portion (not shown) are additionally indicated as rotation-preventing means at the coupling of the stick **325** and **425** to a handle or closure for a container (not shown).

[0063] In the embodiment of FIGS. **3***a* and **3***b* the stabiliser **309** which is in the form of part of the hard component **301** is of a shortened configuration disposed in the interior of the hard component **301**. As a result the application surface W of the soft component **302** already has a high degree of flexibility just behind the hard component **301**.

[0064] FIGS. **4***a* and **4***b* show an embodiment of the applicator in which knobs **420** are provided on the outside surface of the soft component **402**, that serves as the application surface W. It will be appreciated that any other structures and variations in the surface density of those elements, that have already been referred to, are possible.

[0065] In the embodiment of FIGS. **4***a* and **4***b* the stabiliser **409** which is in the form of a part of the hard component **401** projects far into the soft component **402**, in particular in comparison with the preceding embodiments. That serves to stabilise the soft component and is advantageous in particular in the case of very long soft parts.

[0066] FIGS. **5***a* and **5***b* show an advantageous development as a fifth embodiment of an applicator **500** according to the invention, wherein, in comparison with the embodiments of FIGS. **1***a* through **4***b*, there is provided a further or an alternative configuration of the anchoring means in the form of one or more anchoring legs disposed directly in the transitional region **103** between the soft component **502** and the hard component **501**. For making the join, once again disposed in the hard component **501** is the at least one passage **105** as the tubular first joining element **501*** in the form of the tubular recess, wherein the passage **105**, after the operation of injecting the soft component **502** on to the hard component, is filled with the corresponding second joining element **502*** comprising the material of the soft component **502**.

[0067] The further anchoring means is formed in the applicator **500** from two apertures or openings **108*** which are oval or which are in the form of a slot, in the hard component **501** in the transitional region **103**, the apertures or openings being filled in the final condition of the soft component **502** which is injection molded to the hard component. In that case the soft component forms anchoring legs **107***, in which respect the term anchoring leg is based on the joining function of a leg as material of the soft component is to be found on both sides of the aperture **108*** so that such an anchoring leg **107*** forms a closed join between the soft component provided outside the hard component and the soft component arranged in the joining region.

[0068] The terms 'outside' and 'within' are used in relation to the shape of the hard component, that is to say 'the soft component arranged outside the hard component' means approximately 'visible from the exterior' whereas 'the soft component arranged within the hard component' essentially signifies 'not visible from the exterior'.

[0069] The essential difference in relation to the bar portions **107** serving as anchoring means, that is to say anchoring bar portions, in the embodiments of FIGS. **1***a* through **4***b* is that the anchoring legs **107*** formed by the soft component in the embodiment of FIGS. **5***a* and **5***b* engage through or around the grip-like openings **108*** in the hard component **501**, similarly to the links of a chain. In other words, the anchoring means in the form of the joining leg in the transitional region **103** between the soft component **502** and the hard component **501** produces a positively locking join which can be released only by means of destruction thereof. A particular advantage of such anchoring legs directly in the transitional region **103** between the soft component **502** and the hard component **501** is that this can additionally prevent partial detachment or projection of the soft component from the hard component, for example in that way the peripherally extending lip **112** can be additionally fixed and stabilised.

[0070] It will be appreciated that the anchoring legs **107*** can be of any desired geometrical shape, in particular a cross-sectional configuration. In other words, besides the oval configuration shown, round, rectangular and polygonal cross-sections are also possible. It is also possible to provide a plurality of rows of anchoring legs at different spacings from the applicator tip.

[0071] In comparison with all embodiments of FIGS. **1***b*, **2***b*, **2***d*, **3***b* and **4***b*, it is possible if required to set a different length for the stabiliser **109**, **309** and **409** respectively. Thus the stabiliser **109** can terminate in respect of its length with the edge of the hard component **101** (FIGS. **1***a* through **2***d*). It is also possible however for the stabiliser to be shorter (FIG. **3***b*, **309**; FIG. **5***b*, **509**) or longer (FIG. **4***b*, **409**) than the edge of the hard component **301** and **401** respectively.

[0072] In addition the entrainment capability of the application surface, in relation to the material or substance to be applied, that is to say the holding capability or the holding force, can be very specifically and targetedly adjusted by way of the selection of suitable structural elements and can thus be adapted to the respective situation of use, that is to say to the part of the skin intended for application and to the properties of the cosmetic substance such as for example viscosity, surface adhesion, coverage and so forth, on an individual basis. That is facilitated by the injection molding process. The entrainment capability can further be adjusted to the respective situation of use by a suitable choice of the frictional resistance, for example by making a suitable selection of the plastic material for the soft component and the hardness thereof.

[0073] It should be noted that neither examples of use, referred to here, of the applicator according to the invention and the process according to the invention for the production of the applicator according to the invention with improved joining or anchoring of the hard and soft components, are to be interpreted definitively and conclusively.

[0074] In principle any kind of surface structure can have one or more preferred directions which do not necessarily have to be perpendicular to the surface of the soft component. The preferred direction of the structural elements can also be set in dependence on the ergonomic handling of the applicator, depending on the respectively intended use. The materials and structures referred to by way of example can also be used in combination on the same soft component. By way of example different structures for different uses such as for example blending, distributing and so forth can be provided on opposite surfaces of the same soft component. It is also possible for the structural elements to be mixed on an application surface or over the entire soft component.

[0075] Finally the core concept of the above-described invention will be summarised here, concerning a process for the production of an applicator by means of a 2C procedure and a corresponding applicator. An applicator according to the invention can be particularly advantageously used for

distributing a cosmetic substance on the skin, semi-mucous membrane, mucous membrane, hair or small hairs or lashes. Other areas of use can also be envisaged. The invention proposed improved anchorage of the soft component to the hard component by essentially a joining region, arranged in the hard component, being formed between the hard component and the soft component, the joining region having a part of the soft component, which part is in the interior of the hard component, as a joining element. In production of the applicator the operation of injecting the soft component on the hard component is effected at least one injection attachment point through at least one opening in the region of the periphery of the hard component so that the soft component can be injected on the hard component by way of at least one passage which extends in the interior of the hard component from the at least one lateral opening to an end of the hard component and a part of the soft component, that is in the interior of the hard component, forms a positively locking anchoring means so that the applicator does not have to have any visible injection point in the region of the application surface formed by the soft component.

1-19. (canceled)

20. An applicator comprising:

a hard component and a soft component injected on to the hard component for forming an application surface (W), wherein both the hard component and the soft component at least in parts comprise plastic material and the plastic material of the hard component is harder than the plastic material of the soft component,

a joining region arranged substantially in the interior of the hard component is provided between the hard component and the soft component, wherein the joining region has at least a part of the soft component, said part being arranged in the interior of the hard component, in the form of at least one anchoring element.

21. An applicator as set forth in claim **20** wherein additionally there is provided at least a part of the hard component, that is arranged in the interior of the soft component, as a stabiliser.

22. An applicator as set forth in claim **20** wherein the soft component is at least portion-wise rotationally symmetrical in relation to the direction of the longitudinal extent of the applicator.

23. An applicator as set forth in claim **20** wherein an outside surface of the soft component at least partially has a surface structure having a plurality of structural elements.

24. An applicator as set forth in claim **23** wherein the structural elements include at least one of knobs, bristles, and bars.

25. An applicator as set forth in claim **20** wherein provided in the hard component is at least one opening for injection of the soft component thereon and/or for venting in the injection operation disposed in the proximity of the end of the anchoring element that is in the interior of the hard component.

26. An applicator as set forth in claim **20** wherein provided in the hard component is at least one aperture for at least one anchoring leg formed by the soft component, wherein the at least one anchoring leg is a join between the part of the soft component, that is in the interior of the hard component, and a part of the soft component, that is arranged at the outside surface of the hard component.

27. An applicator as set forth in claim **26** wherein the external shape of a periphery in the region of a lateral opening of aperture of the hard component is circular or oval or in the form of a polygon.

28. An applicator as set forth in claim **20** wherein the soft component projects in a longitudinal direction beyond the anchoring element.

29. An applicator as set forth in claim **21** wherein the stabiliser is arranged in the soft component concentrically or eccentrically with respect to the longitudinal direction of the applicator.

30. An applicator as set forth in claim **20** wherein one or more claws of the soft component extend substantially radially into the hard component with respect to the longitudinal direction as an additional anchoring means.

31. An applicator as set forth in claim **20** wherein the applicator has a sharpener at the side in opposite relationship to the soft component.

32. An applicator as set forth in claim **20** wherein a removable protection member is provided in the region of the soft component of the applicator.

33. An applicator as set forth in claim **20** wherein the hard component is in the form of a stick.

34. An applicator as set forth in claim **33** wherein a coupling means is provided on the stick for coupling the stick to a handle portion and/or to a closure for a container.

35. An applicator as set forth in claim **20** wherein claws extend substantially radially into the soft component in relation to the longitudinal direction of the applicator.

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