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(54) **SEALABLE INTERNALLY FED APPLICATOR SYSTEM**

VERSIEGELBARES, INTERN ZUGEFÜHRTES APPLIKATORSYSTEM

SYSTÈME D'APPLICATEUR SCELLABLE À ALIMENTATION INTERNE

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Description

[0001] The invention concerns an internally fed applicator system for applying at least one flowable substance to portion of the body or skin area to be treated according to the preamble of claim 1.

TECHNICAL BACKGROUND

[0002] Internally fed applicator systems are known in different constellations, see, e.g. US 2 819 723. Most internal fed applicator systems offer one single applicator for applying the substance to the target area. Problems occur with such systems as soon as the storage container stores more than one single portion of the substance to be applied so that the applicator system is used only from time to time with long pauses in between. In this case the known applicator systems suffer from the drawback that the internally feeding ducts run the risk to clog during the long pause between one and the next application. The risk of clogging increases if the applicator systems are stored between one and the next application while the applicator is detached and disposed or (in some cases) cleaned. As soon as the applicator is detached, the internally feeding ducts are subjected to drying under the effect of the ambient. The risk of clogging rises extremely if at least one of the substances is a trigger substance that starts the chemical reaction of the mixture when being in contact with ambient air, ambient humidity or ambient US radiation.

[0003] The said problem is further exacerbated if the substance to be applied is a two or more component substance that has to be prepared within the applicator right before application.

THE OBJECT OF THE INVENTION

[0004] It is an object of the invention to provide an internally fed applicator system that allows to apply from time to time a restricted portion of the substance to be applied while the majority of the substance is stored in standby within the applicator system over a longer period without becoming deteriorated or clogging the internal feed system.

THE INVENTIVE SOLUTION

[0005] The inventive solution proposed to that end is an internally fed applicator system according to claim 1.

[0006] Proposed is an applicator system for applying at least one flowable substance, preferably in the shape of a fluidal or viscous substance on the basis of water, alcohol, oil, fat, wax and/or silicone. This is a substance to be applied. The applicator system comprises a body forming at least one reservoir for storing at least one substance to be applied.

[0007] Moreover, a pump device for expelling the at least one substance out of the reservoir is comprised.

Preferably, the expression "pump device" is to be understood in a broad sense, so that it comprises not only syringe/plunger systems and cylinder/plunger systems, but also squeezable containers or bags or peristaltic systems, for example. In addition, a duct system for feeding the at least one pumped substance from the reservoir out of the body through at least one applicator (belonging to the system) to the at least one mouth of the said applicator is comprised.

[0008] Finally, a detachable applicator for applying the at least one substance is provided. In most cases the applicator is a disposable "one-way" applicator made of one or more plastic materials by means of injection molding and - maybe - mounting the according parts.

[0009] According to the invention, the applicator system comprises a movable valve that can be moved from an open to a closed position and vice versa by means of moving the applicator relative to the body. That means that the applicator itself is an operation organ or "handle" for the valve. For that purpose the applicator is designed that way that it can be directly coupled to the valve body, preferably for rotating it from close to open position and vice versa.

[0010] Such a system is easy to operate and seals the ducts (at least those ducts that are not part of the disposable applicator or applicator head itself) of the system securely against the detrimental effect of the ambient air etc. and prevents clogging.

[0011] The valve comprises a valve seat and a valve body. The valve body and/or the valve seat can be designed such that they can be and are made of plastic material. The valve body comprises a coupling for fixing the applicator. The coupling is designed as an annular notch into which an annular extension of the applicator is stuck.

[0012] This design has the advantage that the ducts can be shut off directly upstream of the applicator, so that the duct portion that is exposed to the detrimental effect of ambient air etc. even after closing the valve is extremely short.

[0013] Preferably, the valve body has at least one internal duct that is movable

> from a first position in which its - at least one - internal duct interconnects the at least one duct coming from the reservoir with the duct through the applicator

> to a second position in which its body blocks the interconnection between the at least one duct coming from the reservoir and the duct through the applicator.

[0014] A valve body that is designed that way works very reliably even if substances to be applied are very viscous.

[0015] A preferred embodiment provides that the valve body has two separate internal ducts for conducting different substances to a central output duct. The central

output duct is embodied in the valve body where said separate internal ducts meet without coming into any fluidal contact with one another, since the central output duct preferably embodies two parallel but separated tracks that do not stand in fluidal communication with one another.

[0016] Such a design with a central output duct provides for a very good preparation of the substances for the mixing (without having had contact before) within the applicator by means of a static mixer integrated into the applicator. The substances are kept completely separate from one another within the valve body.

[0017] The valve body is rotatably borne by the valve seat. A rotationally operated valve provides for an excellent fail safeness even under difficult operation conditions and can easily control two or more different conducts for two or more substances to be mixed before the output to the application surface.

[0018] Preferably a rotation control is provided, so that the valve body cannot be rotated back and forth for more than totally 130° and better not more than totally 120°. In most ideal cases said rotation is limited to 90°. The aforementioned values apply to applicator systems using two different substances to be mixed before output on the application surface. For applicator systems using more than two of such substances a value of less than 75° is the optimum. That way it is made sure that it is not possible to unwantedly introduce the first substance into the region of the second substances and vice versa. With other words: That way an unwanted mixing of the substances within the valve is avoided, even if the valve is not operated with outermost care.

[0019] The movable valve is moved from an open to a closed position and vice versa by means of moving the applicator relative to the body. Such a design allows a convenient operation of the valve without any additional tool and without smudging one's fingers.

[0020] Preferably, at least one internal duct of the valve body extends from the jacket of the valve body to the center of the valve body.

[0021] It is preferred to embody an applicator system that comprises at least two different applicators. Preferably at least one thereof embodies an internal static mixer. This at least one applicator can be coupled according to the discretion of the user to the duct system in order to be internally to be fed with the at least two substances that way, that the at least two substances uniformly mix within this at least one applicator. In case an applicator with no internal duct belongs to the system this applicator can be coupled the same way in order to be firmly hold and comfortably handled during the application

[0022] In addition the following has to be communicated:

Mostly the applicators are disposable. Preferably that means that the applicators are made of plastic material by injection moulding. Ideally the applicators are made of not more than two parts that are mounted to each other after having been moulded. Said parts are the applicator

body itself (flocked or unflocked) and the static mixer.

[0023] Further design aspects for further improving the invention are disclosed by the rest of the sub claims.

[0024] Further technical effects, advantages, and improvement options are disclosed by the following description of preferred embodiments on the basis of the figures.

LIST OF FIGURES

10 **[0025]**

Figure 1 shows another review to an applicator system according to 1st embodiment of the invention.

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Figure 2 shows a longitudinal section through the applicator system according to figure 1.

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Figure 3 shows a longitudinal section through the applicator system according to figure 1, but turned for 90°.

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Figure 4 shows an enlarged view onto the housing and applicator portion of the applicator system shown by figure 3.

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Figure 5 shows a longitudinal section through the 2nd embodiment of the applicator system.

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Figure 6 shows an enlarged view onto the housing and applicator portion of the applicator system shown by figure 5.

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Figure 7 shows a front view to 3rd embodiment of an inventive an applicator system:

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Figure 8 shows a perspective view of the backside of the applicator system according to figure 7.

Figure 9 shows a view from above to the applicator system according to figure 7.

Figure 10 shows a longitudinal intersection through an applicator system according to figure 7.

Figure 11 shows a horizontal intersection through the yoke of an applicator system according to figure 7.

Figure 12 shows a vertical intersection (cutout) for the yoke of the applicator system according to Figure 7.

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Figure 13 is the first picture of a sequence showing the possible form fit interaction between the applicator 15 and the snap-on cap 22.

Figure 14 is the second picture of a sequence showing the possible form fit interaction between the applicator 15 and the snap-on cap 22.

Figure 15 is the third picture of a sequence showing the possible form fit interaction between the applicator 15 and the snap-on cap 22.

Figure 16 shows another applicator to be used as a component of the inventive system.

Figure 16a shows a lateral view of Fig. 16.

Figure 17 shows another applicator to be used as a component of the inventive system.

Figure 17a shows a lateral view of Fig. 17.

Figure 18 shows another applicator to be used as a component of the inventive system.

Figure 18a shows a lateral view of Fig. 18.

FIRST INVENTIVE EMBODIMENT

[0026] A first embodiment of the inventive applicator system is shown by Figures 1 to 4. Particular reference is made to Figure 1.

THE RESERVOIR

[0027] Here, the body 2 forming the reservoir(s) is embodied as a combination of a plunger 3 and a syringe 4. The interplay of the plunger 3 and the syringe 4 embodies two reservoirs 5 and 6. Each of the reservoirs 5, 6 contains one substance to be applied.

[0028] Preferably, the substances stored apart from one another are different in regard to their colour or their chemical and/or physical composition.

[0029] The plunger 3 and the syringe 4 may be equipped with a protruding stopper 10 and 11. The stoppers 10, 11 improve the finger gripping when pressing the plunger 3 and the syringe 4 together in order to expel the substances out of their reservoirs 5, 6.

[0030] It is preferred that the syringe 4 is equipped with a guiding tube 7, as shown by Fig. 3. Said guiding tube 7 interacts with an according guiding tube 8 of the plunger 3. That way the guiding properties of the plunger 3 are improved.

THE COUPLING OF THE APPLICATOR TO THE VALVE

[0031] At its end - that is located opposite to the end with an opening 9 for introducing the plunger 3 - the syringe 4 forms a housing section HS with a valve seat 12. The valve seat 12 accommodates, preferably in a rotatable fashion, the valve body 13.

[0032] Preferably, the valve body is positioned directly upstream of the applicator 15, without any additional duct that is formed outside of the valve body and that interconnects the valve body 13 and the applicator 15. Instead, the applicator is directly stuck into or onto the valve body 13.

[0033] The details of this valve seat 12 and the valve body 13 are shown by Fig. 4.

[0034] The valve body 13 forms a coupling portion 14. The coupling portion 14 can be designed that way that the applicator 15 can be coupled to the valve body 13 so that it is firmly held by the valve body 13 even under the influence of the forces of the application.

[0035] In most cases the applicator 15 is fixed to the valve body 13 by means of an elastic form fit connection. Normally, such a form fit connection is realised as a snap-on connection.

[0036] In the specific case shown here by Fig. 4, a coupling portion 14 alone is not responsible for holding the applicator 15 sufficiently firm.

[0037] For reason of supporting the coupling portion 14 embodied in the valve body 13, a snap-on cap 22 is provided. The snap-on cap 22 has a central hole that holds the applicator 15. This holding of the applicator is realized by means of the form fit between the borders confining the central hole of the snap-on cap and an annular groove 23 provided in the (shaft of the) applicator 15. As one sees the borders extend into an annular groove 23 in the applicator 15.

[0038] A more detailed view how the producing and loosening of said form fit can take place is depicted by Figs. 13 to 15. The following design is advantageous:

The applicator 15 can be stuck onto the coupling portion 14 of the valve body 13 by means of a straight movement along the longitudinal axis L, see the straight arrow. Hereinafter the applicator 15 is turned for substantially 90° (in clockwise direction here), as visualized by Fig. 14. The valve body 13 remains stationary, it does not move during this locking process.

[0039] Grace to this turning the (local) left-hand sided and righthand sided annular grooves 23 become engaged with the borders confining the central hole of the snap-on cap 22, see what is visualized by Fig. 15.

[0040] As a summary one can say that it is a preferred embodiment if the shaft of applicator 15 is not completely cylindrical but locally flattened, at least between the feed-in opening of the applicator 15 and the area for interaction with the snap-on cap 22. Said area for the form fit interaction of the applicator 15 with the snap-on cap 22 is positioned above the valve body 13.

[0041] The snap-on cap 22 is designed that way that it can securely be snapped onto a complementary portion of the syringe 4 or, more exactly, onto a complementary portion of the housing HS formed by the syringe, as shown by Figure 4.

[0042] For that purpose, the snap-on cap 22 may have hooks 45 that snap into recesses or windows 46 of said housing HS as soon as the snap-on cap 22 has reached

its final position, see what is shown by Fig. 4 and Fig. 1. Moreover, the snap-on cap 22 secures the valve body 13 against extraction out of the valve seat 12.

[0043] Regardless how the snap-in connection between the applicator 15 and the valve body 13 is realized, it is in each case preferred that the interconnection between the valve body 13 and the applicator 15 is fluid tight. In case of the construction shown by Fig. 4, said tightness can be provided by the annular extension 25 of the applicator 15. Said annular extension 25 is stuck over the cylindrical flange CF of the valve body 13.

[0044] More preferably, the valve body 13 even forms an annular groove so that the annular extension 25 of the applicator 15 is caught with its outer jacket JA as well as with its inner jacket. If a proper dimensioning and layout is provided, the interconnection can be designed that way that the annular extension 25 undergoes an elastic compression when being stuck over the cylindrical flange 26.

[0045] Preferably, the detaching of the applicator 15 shown is possible with the bare hands of the user, without using any tool, regardless whether a snap-on cap 22 is used or not.

[0046] It is preferred that the interconnection that is formed between the valve body 13 of the applicator 15 allows itself the transfer of torque. That way the valve body 13 can be rotated by rotating the applicator 15. An optimized technical design provides that such a torque proof interconnection is realized by means of at least one protrusion or at least one tooth extending from the valve body 13 and gripping into a complementary recess of the applicator 15, or vice versa. Such a construction provides for positive locking fit in the direction of rotation.

THE FUNCTION OF THE VALVE

[0047] As can be seen from Fig. 4, the valve body 13 is equipped with two fully internal ducts 16 and 17.

[0048] Preferably, said ducts 16, 17 extend from the jacket portion of the valve body 13 into the interior of the valve body 13.

[0049] The said jacket portion of the valve body 13 has preferably a conical shape. That way it is easier to grant tightness without burdensome narrowing of the tolerances, and to perform a very compact change of direction of the duct formed that way.

[0050] In the center of the valve body 13 said ducts 16 and 17 preferably meet a central output duct 18. This central output channel 18 is embodied along the rotational axis L of the valve body 13. In most cases said ducts 16 and 17 extend orthogonally to the rotational axis L of the valve body 13.

[0051] The central output channel 18 is in fluidal connection with the duct 19 embodied in the applicator 15, more particular, embodied fully in the interior of the applicator 15.

[0052] When the valve body 13 takes the position shown by Fig. 4, the mouth of said ducts 16 and 17 -

which are embodied in the jacket portion of the valve body 13 - communicate with the ducts 20 and 21 in the syringe 4 or, more generally spoken, in the body forming the reservoir.

[0053] That means that each pressure onto the plunger 3 expels the substances to be applied out of the reservoirs 5, 6. The substances flow through their ducts 20 and 21 in the syringe and enter through according mouth openings into the ducts 16 and 17 of the valve body 13. After having passed the ducts 16 and 17 of the valve body 13, the substances are fed into the central output channel 18 of the valve body 13. Nevertheless it is preferred that the two substances do not yet meet or mix here, for that purpose the central output channel 18 provides two parallel but fully separated ducts.

[0054] Hereinafter the substances flow into the duct 19 embodied in the applicator 15. In most cases the two substances are still kept apart for some distance within the duct 19. That way they will meet for first time when they arrive directly at the static mixer embodied within the applicator 15.

[0055] Finally, after being mixed, the substances to be applied leave the internal area of the applicator system through the at least one mouth 27 of the applicator 15.

[0056] The central output channel 18 has, as already described, in most cases two different tracks or ducts, too, that do not stand in any fluidal communication with one another. The reason for this is that it is in most cases not allowed that the different substances to be applied mix with one another before they have reached the applicator. Each mixing with one another would start a chemical reaction that has to be started completely out of the reusable parts of the applicator system in order to avoid clogging or detrimental effects in regard to the rest of the stored substances.

[0057] For that reason the mixer is completely integrated into the disposable applicators.

[0058] A very interesting optional point is that even the duct 19 within the applicator 15 is designed that way that it forms in its beginning for some millimeters an entrance with two completely different and separated tracks that keep the at least two substances to be applied separated within the applicator until they enter into the static mixer within the applicator.

[0059] The reason for this is rather simple: That way it is made sure that the disposable applicator can be pulled off from the valve body 13 without smudging the valve body 13 unintendedly with a mixture of the two or more substances to be applied, that could start to harden within the valve 13 - so that the valve 13 is clogged when some time later the next application will be started.

[0060] The valve body 13 is rotatably hold by the valve seat 12, so that the valve body 13 can be rotated around the axis L by means of rotating the applicator 15. As soon as the valve body 13 is turned for example 90°, the situation is as shown by Figure 2. That means the internal ducts 16 and 17 of the valve body 13 are not any longer in fluidal communication with the ducts 20 and 21 in the

syringe 4 or - more generally spoken - in the body forming the reservoir. Instead, the valve body 13 blocks or seals the ducts 20 and 21, so that it is not possible to expel substances from the reservoir or reservoirs 5, 6.

[0061] Ideally, the valve and/or the valve seat realize at least one rotation stopper where the rotation of the valve body 13 comes to an end as soon as the valve body is in its position where the ducts fully opened

THE APPLICATOR

[0062] It is very preferred that the duct 19 embodied in the applicator 15 is equipped with a static mixer 24 that mixes the substances expelled into the interior of the applicator during their flow along the interior of the applicator. The static mixer normally consists of a number of stationary hurdles that deflect the stream of the different substances repeatedly, back and forth, so that the local direction of flow changes. That leads to a mixing of the jointly flowing substances. The static mixer as such can be of one of the types as disclosed by prior published, granted patents EP 0730913 or EP 0885651. The designs of the mixers as such and their physical embodiment and their fixation within or integration into an outer guiding tube is included into this application by reference.

[0063] Another optional detail is shown by Fig. 4. The duct 19 embodied in the applicator 15 branches after completion of the mixing so that the mixed substances are locally dispensed through several mouths 27 of the applicator at a number of places between the bristles or teeth of the applicator. That way a more uniform loading of the applicator with the substances to be applied is made sure.

SECOND INVENTIVE EMBODIMENT

[0064] The second embodiment is very similar to the first embodiment so that all things described above for the first embodiment apply to the second embodiment, too, as long as nothing different is notified in the following.

[0065] The difference is that for the second embodiment no combination of a classical combination of a syringe and a plunger is used in order to form the body which serves as a reservoir. Instead, the body is constructed as a pump whose piston is driven by means of a screw driving mechanism.

[0066] The main body portion 29 forms two reservoirs 5 and 6, too.

[0067] The main body portion 29 holds a threaded spindle 30 within each reservoir 5 and 6. Each threaded spindle 30 carries a piston 31 that rides with its female thread on the male thread of said spindle 30. At the distal end each spindle 30 carries a sprocket 32. Moreover, the main body portion 29 bears at its distal end a tubular sleeve 34 with an internal toothing 35. This tubular sleeve 34 is rotatably held by the main body portion 29. For that purpose the tubular sleeve 34 preferably possesses a tubular extension 36 that is stuck into the central guiding

tube 37 of the main body portion 29.

[0068] The internal toothing 35 and the sprockets 32 engage. That way the sprockets 32 are rotated as soon as the user turns the tubular sleeve 34. As soon as the sprockets 32 rotate, the threaded spindle 30 screws the pistons 31 in direction to the proximal i. e. in direction toward the applicator, for example. That way the substance to be applied is expelled out of its reservoir 5 or 6.

[0069] The valve mechanism and the way how to fix the applicator, for example to the valve body 13, are fully the same as described above for the first embodiment.

[0070] The Figures for this embodiment illustrate that the applicator system 1 can be easily equipped with a different applicator 15. In this particular case, that is not mandatory, the interlocking between the snap-on cap 22 and the applicator 15 takes place as explained on the basis of Figs. 4 to 16

THIRD INVENTIVE EMBODIMENT

[0071] The third embodiment is very similar to the first and the second embodiment, too. For that reason, all things described above apply to the third embodiment, too, as long as nothing different is notified in the following.

[0072] The difference is that for the third embodiment a piston pump is used in order to feed the substances to be applied via the valve body 13 into the applicator 15. For that reason, the main body portion 29 forms a kind of bottle, in the case here a twin bottle with two different reservoirs 5 and 6. Each of the bottles preferably carries a bottleneck that is not shown in detail here. Through the bottleneck a sucking tube 38 is sunk into each reservoir 5 and 6. On each bottleneck a said soap pump 39 is fixed. For that purpose the soap pumps 39 may have a threaded cap each with which each soap pump is screwed onto the bottleneck assigned to it.

[0073] An interesting difference is the yoke 40 that is stuck over the expelling tubes 41 of the soap pumps 39. That way the expelling tubes 41 of the soap pumps 39 feed the pumped substances into the yoke 40. For that purpose, the yoke 40 is equipped with internal ducts 42 and 43. The yoke 40 embodies a valve seat 12 as it is known from the first and the second embodiment. In the same manner as in the first and the second embodiment, the valve seat 12 accommodates a valve body 13. The valve body 13 is designed as already described. In Figure 11 it is displayed in its open position. In this position of the valve body 13 there is a continuous, uninterrupted duct between each of the soap pumps and the internal duct 19 of the applicator 15 that ends into at least one mouth 27 of the applicator.

[0074] As already described, it is possible to couple at least one and preferably different applicators to the valve body 13 in a manner that allows to turn the valve body 13 by turning the applicator. That way the valve body 13 can be brought into its closed position, as described before.

[0075] Again, the applicator 15 is preferably equipped

with a static mixer 24 that thoroughly mixes the substances to be applied that are fed by means of their ducts into the central output channel 18 in order to be conveyed from there to the internal duct 19 of the applicator.

APPLICATORS THAT MAY BELONG TO THE SYSTEM

[0076] In many cases the invention is very advantageous if only one and the same applicator is used as a one-way applicator being disposed after application.

[0077] That way the stored contents keeps always fresh and in usable condition.

[0078] Moreover a number of cases are conceivable in which the use of a number of different applicators is very helpful.

[0079] For that purpose one or more of the applicators disclosed hereinafter can be used in addition.

[0080] Figure 16 discloses an internally fed applicator in the shape of a frontal comb 47. Preferably all or at least a number of its tines 48 have an internal duct for dispensing the product to be applied through an orifice 49 at the end of the respective tine 48.

[0081] The shaft 50 of this applicator accommodates a mixer which is of the type as explained before. Moreover the shaft 50 is embodied preferably in a way that it is fit for coupling to the snap-on cap, for example, as explained before. The features allowing this coupling action are not depicted here. Once again the applicators are preferably designed such, that the 2 different substances to be mixed enter into the shaft 50 without being mixed before so that the substances come for first time in contact when they directly reach the mixer.

[0082] It is preferred that the tines 48 being equipped with the internal ducts show a concave outer end with one or better opposite two lateral openings - so that their orifice 49 is not obstructed when the outer end of the tine comes in contact with the skin or the hairs.

[0083] Moreover it is preferred that those tines 48 that are not provided with internal ducts show an outer end having a chisel-like shape. Such a design improves the combing effect.

[0084] It can be an option, to position directly alternating a tine 48 with an internal duct and a tine with no internal duct as shown by Fig. 16.

[0085] Figure 17 discloses another alternative applicator. Compared to the applicator according to figure 16 this applicator may exhibit the only difference that no tines 48 are provided but bristles, in the shape of a bristle covering 51. The single bristles are flexible and there are in most cases no internally fed bristles. Instead, even if an internal feeding is provided, such an internal feeding is accomplished by means of orifices that open out into the area of the roots of the bristles.

[0086] Once again the shaft 50 of this applicator may accommodate the mixer of the type explained before if any mixer is used.

[0087] Moreover the shaft 50 is designed preferably in

a way that it is fit for coupling to the snap-on cap 22, as explained before, for example. This is not depicted here.

[0088] Figure 18 discloses another alternative applicator. This applicator may carry no tines 48 or bristles but a blank, plane, convex or - at least slightly - concave surface 52. Said surface 52 may be flocked. It is a surface for spreading and smearing cosmetics.

[0089] This applicator can be internally fed, too. In other cases such an applicator has no internal feeding. It is mounted to the device and used after prior outputting of cosmetics to the skin or hairs.

LIST OF REFERENCE NUMBERS

15	[0090]	
	1	applicator system
	2	body
	3	plunger
20	4	syringe
	5	reservoir
	6	reservoir
	7	guiding tube syringe
	8	guiding tube plunger
25	9	opening of syringe
10	10	protruding stopper
	11	protruding stopper
	12	valve seat
	13	valve body
30	14	coupling portion
	15	applicator
	16	duct of valve body
	17	duct of valve body
	18	central output channel
35	19	duct embodied in the applicator
20	20	duct within the syringe
	21	duct within the syringe
	22	snap-on cap
	23	annular groove
40	24	static mixer
	25	annular extension
	26	cylindrical flange
	27	mouth of the applicator
	28	bristle or tooth or prong
45	29	main body portion
	30	threaded spindle
	31	piston
	32	sprocket
	34	tubular sleeve
50	35	internal toothing
	36	tubular extension
	37	central guiding tube
	38	sucking tube
	39	soap pump
55	40	yoke
	41	expelling tubes 41
	42	internal duct
	43	internal duct

44	not awarded
45	hook of the snap-on cap
46	window for nesting the hook of the snap-on cap
47	not assigned
48	tine
49	orifice
50	shaft
51	bristle covering
52	blank application surface
JA	outer jacket
CF	cylindrical flange
L	longitudinal axis or axis of rotation
HS	housing section

Claims

1. Applicator system (1) for applying at least one flowable substance, with a body (2) forming at least one reservoir (5; 6) for storing at least one substance to be applied, a pump device for expelling the at least one substance out of the reservoir (5; 6), a detachable applicator (15) for applying the at least one substance and a duct system (16, 17, 18, 19, 20, 21) for feeding the at least one pumped substance from the reservoir (5; 6) out of the body through the applicator (15) to at least one mouth (27) of the applicator (15), whereby the applicator system (1) comprises a movable valve (12, 13) that can be moved from an open to a closed position and vice versa by means of moving the applicator (15) relative to the body (2), the valve (12, 13) comprising a valve seat (12) and a valve body (13), **characterized in that** said valve body (13) is held in place by the valve seat (12) constituted by the body (2) so that the valve body (13) is rotatable relative to the body (2) and **in that** the applicator is designed that way that it can be directly coupled to the valve body (13) which comprises a coupling for fixing the applicator by sticking an annular extension of the applicator into an annular notch of the valve body so that it forms a handle for rotating the valve body (13) from close to open position and vice versa
2. Applicator system (1) according to claim 1, **characterized in that** the valve body (13) has at least one internal duct (16; 17) and that the valve body (13) is movable from a first position in which its at least one internal duct (16; 17) interconnects the at least one duct (20, 21) coming from the reservoir (5; 6) with the duct (19) through the applicator (15) to a second position in which the valve body (13) blocks the interconnection between the at least one duct (20, 21) coming from the reservoir (5; 6) and the duct (19) through the applicator (15) .
3. Applicator system (1) according to claim 2, **characterized in that** the valve body (13) has two separate internal ducts (16, 17) for conducting different substances to a central output channel (18) embodied in the valve body (13) where said separate internal (16, 17) ducts meet.
4. Applicator system (1) according to one of the preceding claims, **characterized in that** the movable valve (12, 13) can be moved from an open to a closed position and vice versa by means of moving the applicator (15) relative to the body (2)
5. Applicator system (1) according to one of the preceding claims, **characterized in that** at least one internal duct (16; 17) of the valve body (13) extends from a jacket of the valve body (13) to the center of the valve body (13).
6. Applicator system (1) according to claim 5, **characterized in that** the jacket of the valve body (13) has a conical shape where the ducts (16, 17) start, that extend from the jacket of the valve body (13) to the center of the valve body (13).
7. Applicator system (1) according to claim 6, **characterized in that** the longitudinal axes (L) of the ducts (20, 21) form a preferably right angle with the longitudinal axes (L) of the ducts (16, 17) extending from the jacket of the valve body (13) to the center of the valve body.
8. Applicator system (1) according to one of the preceding claims, **characterized in that** the valve seat (12) is embodied in a yoke (40) that interconnects the expelling tubes (41) of two or more pumps (39) that feed the pumped substances into the yoke (40) if the yoke (40) is pressed down, so that the expelling tubes (41) feed the internal ducts of the yoke (40), which, in turn, feed the internal ducts (16, 17) of the valve body (13) when it is in open position.
9. Applicator system (1) according to one of the preceding claims, **characterized in that** the applicator system (1) comprises at least two different applicators (15) with preferably at least one thereof embodying an internal static mixer (24), and which can be coupled according to the discretion of the user to the duct system (16, 17, 18, 20, 21) in order to be held internally to be fed with the at least two substances that way, that the at least two substances uniformly mix within the at least one applicator (15) .
10. Applicator system (1) according to one of the preceding claims, **characterized in that** one of the applicators (15) carries bristles or prongs (28) and has a multiplicity of outputting mouths (27) that dispense the mixture of the substances to be applied between the bristles or prongs (28).

11. Applicator system (1) according to one of the preceding claims **characterized in that** at least one of the applicators (15) carries a flocking.
12. Applicator system (1) according to one of the preceding claims **characterized in that** at least one of the applicators (15) carries a bare smudging surface without bristles, prongs, fingers or a flocking.
13. Applicator system (1) according to one of the preceding claims **characterized in that** at least one of the applicators (15) is a smearing or spreading applicator only and no internally fed applicator with a passage for substance to be applied passing through the applicator while at least one another alternative applicator is internally fed.

Patentansprüche

1. Applikatorsystem (1) zum Auftragen mindestens einer fließfähigen Substanz, mit einem Körper (2), der mindestens einen Vorratsbehälter (5; 6) zum Speichern mindestens einer aufzutragenden Substanz bildet, einer Pumpvorrichtung zum Ausstoßen der mindestens einen Substanz aus dem Vorratsbehälter (5; 6), einem abnehmbaren Applikator (15) zum Auftragen der mindestens einen Substanz und ein Kanalsystem (16, 17, 18, 19, 20, 21) zum Zuführen der mindestens einen gepumpten Substanz vom Vorratsbehälter (5; 6) aus dem Körper durch den Applikator (15) zu mindestens einer Mündung (27) des Applikators (15), wobei das Applikatorsystem (1) ein bewegliches Ventil (12, 13) umfasst, das durch Bewegen des Applikators (15) relativ zum Körper (2) von einer offenen in eine geschlossene Position und umgekehrt bewegt werden kann, wobei das Ventil (12, 13) einen Ventilsitz (12) und einen Ventilkörper (13) umfasst, **dadurch gekennzeichnet, dass** der Ventilkörper (13) von dem durch den Körper (2) festgelegten Ventilsitz (12) in Position gehalten wird, so dass der Ventilkörper (13) relativ zum Körper (2) drehbar ist und dass der Applikator so gestaltet ist, dass er direkt mit dem Ventilkörper (13), der eine Kupplung zum Befestigen des Applikators aufweist, gekoppelt werden kann, indem ein ringförmiger Fortsatz des Applikators in eine ringförmige Kerbe des Ventilkörpers gesteckt wird, so dass er einen Griff bildet, um den Ventilkörper (13) von der geschlossenen in die geöffnete Position zu drehen und umgekehrt.
2. Applikatorsystem (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** der Ventilkörper (13) mindestens einen Innenkanal (16; 17) aufweist und dass der Ventilkörper (13) aus einer ersten Position, in der sein mindestens ein Innenkanal (16; 17) den mindestens einen vom Vorratsbehälter (5; 6) kommenden Kanal (20, 21) mit dem Kanal (19) durch den Applikator (15) verbindet, zu einer zweiten Position bewegbar ist, in der der Ventilkörper (13) die Verbindung zwischen dem mindestens einen vom Vorratsbehälter (5; 6) kommenden Kanal (20, 21) und dem Kanal (19) durch den Applikator (15) blockiert.
3. Applikatorsystem (1) nach Anspruch 2, **dadurch gekennzeichnet, dass** der Ventilkörper (13) zwei separate Innenkanäle (16, 17) zum Leiten unterschiedlicher Substanzen zu einem im Ventilkörper (13) ausgebildeten zentralen Ausgangskanal (18) aufweist, wo diese separaten Innenkanäle (16, 17) aufeinandertreffen.
4. Applikatorsystem (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das bewegliche Ventil (12, 13) durch Bewegen des Applikators (15) relativ zum Körper (2) von einer offenen in eine geschlossene Position und umgekehrt bewegbar ist.
5. Applikatorsystem (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** sich mindestens ein Innenkanal (16; 17) des Ventilkörpers (13) vom Mantel des Ventilkörpers (13) bis zur Mitte des Ventilkörpers (13) erstreckt.
6. Applikatorsystem (1) nach Anspruch 5, **dadurch gekennzeichnet, dass** der Mantel des Ventilkörpers (13) dort, wo die Kanäle (16, 17) beginnen, die sich vom Mantel des Ventilkörpers (13) bis zur Mitte des Ventilkörpers (13) erstrecken, eine konische Form hat.
7. Applikatorsystem (1) nach Anspruch 6, **dadurch gekennzeichnet, dass** die Längsachsen (L) der Kanäle (20, 21) mit den Längsachsen (L) der Kanäle (16, 17), die sich vom Mantel des Ventilkörpers (13) bis zur Mitte des Ventilkörpers erstrecken, einen vorzugsweise rechten Winkel bilden.
8. Applikatorsystem (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Ventilsitz (12) in einem Joch (40) ausgebildet ist, das die ausstoßenden Rohre (41) von zwei oder mehr Pumpen (39) verbindet, die die gepumpten Substanzen in das Joch (40) leiten, wenn das Joch (40) nach unten gedrückt wird, so dass die ausstoßenden Rohre (41) die Innenkanäle des Jochs (40) speisen, die wiederum die Innenkanäle (16, 17) des Ventilkörpers (13) bei geöffneter Position speisen.
9. Applikatorsystem (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Applikatorsystem (1) mindestens zwei verschiedene Applikatoren (15) umfasst, von denen vorzugsweise mindestens einer als innerer statischer

Mischer (24) ausgebildet ist, der nach Ermessen des Benutzers an das Kanalsystem (16, 17, 18, 20, 21) angekoppelt werden kann, um innen gehalten zu werden, um mit den mindestens zwei Substanzen so gespeist zu werden, dass sich die mindestens zwei Substanzen innerhalb des mindestens einen Applikators (15) gleichmäßig vermischen.

10. Applikatorsystem (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** einer der Applikatoren (15) Borsten oder Zacken (28) trägt und eine Vielzahl von Ausgabemündungen (27) aufweist, die das Gemisch der aufzutragenden Substanzen zwischen den Borsten oder Zacken (28) abgeben.
11. Applikatorsystem (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** mindestens einer der Applikatoren (15) eine Beflockung trägt.
12. Applikatorsystem (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** mindestens einer der Applikatoren (15) eine blanke Wischfläche ohne Borsten, Zacken, Finger oder Beflockung trägt.
13. Applikatorsystem (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** mindestens einer der Applikatoren (15) nur ein Wisch- oder Streichapplikator ist und kein innengespeister Applikator mit einem Durchlass für eine durch den Applikator führende aufzutragende Substanz, während mindestens ein weiterer alternativer Applikator innengespeist wird.

Revendications

1. Système d'applicateur (1) pour appliquer au moins une substance fluide, avec un corps (2) formant du moins un réservoir (5; 6) pour stocker du moins une substance à appliquer, un dispositif de pompe servant à expulser la du moins une substance du réservoir (5; 6), un applicateur amovible (15) servant à appliquer la du moins une substance et un système de conduits (16, 17, 18, 19, 20, 21) servant à conduire la du moins une substance pompée à partir du réservoir (5; 6) du corps à travers l'applicateur (15) vers du moins une embouchure (27) de l'applicateur (15), le système applicateur (1) comprenant une vanne mobile (12, 13) qui peut être déplacée d'une position ouverte à une position fermée et vice versa en déplaçant l'applicateur (15) par rapport au corps (2), la vanne (12, 13) comportant un siège de vanne (12) et un corps de vanne (13), **caractérisé en ce que** ledit corps de vanne (13) est maintenu en place par le siège de vanne (12) constitué par le corps (2) de

sorte que le corps de vanne (13) est rotatif par rapport au corps (2) et **en ce que** l'applicateur est conçu de manière à pouvoir être accouplé directement au corps de vanne (13), qui comprend un accouplement pour fixer l'applicateur, en mettant un prolongement annulaire de l'applicateur dans une encoche annulaire du corps de vanne de manière à former une poignée pour tourner le corps de vanne (13) de la position fermée à la position ouverte et vice versa.

2. Système d'applicateur (1) selon la revendication 1, **caractérisé en ce que** le corps de vanne (13) comporte du moins un conduit interne (16; 17) et **en ce que** le corps de vanne (13) peut se déplacer d'une première position dans laquelle son du moins un conduit interne (16; 17) relie le du moins un conduit (20, 21) provenant du réservoir (5; 6) avec le conduit (19) à travers l'applicateur (15) à une seconde position dans laquelle le corps de vanne (13) bloque l'interconnexion entre le du moins un conduit (20, 21) provenant du réservoir (5; 6) et le conduit (19) à travers l'applicateur (15).
3. Système d'applicateur (1) selon la revendication 2, **caractérisé en ce que** le corps de vanne (13) comporte deux conduits internes séparés (16, 17) servant à conduire des substances différentes vers un canal de sortie central (18) réalisé dans le corps de vanne (13) où lesdits conduits internes séparés (16, 17) se rejoignent.
4. Système d'applicateur (1) selon l'une des revendications précédentes, **caractérisé en ce que** la vanne mobile (12, 13) peut être déplacée d'une position ouverte à une position fermée et vice versa en déplaçant l'applicateur (15) par rapport au corps (2).
5. Système d'applicateur (1) selon l'une des revendications précédentes, **caractérisé en ce que** du moins un conduit interne (16 ; 17) du corps de vanne (13) s'étend d'une enveloppe du corps de vanne (13) au centre du corps de vanne (13).
6. Système d'applicateur (1) selon la revendication 5, **caractérisé en ce que** l'enveloppe du corps de vanne (13) a une forme conique au point de départ des conduits (16, 17) qui s'étendent de l'enveloppe du corps de vanne (13) au centre du corps de vanne (13).
7. Système d'applicateur (1) selon la revendication 6, **caractérisé en ce que** les axes longitudinaux (L) des conduits (20, 21) forment un angle de préférence droit avec les axes longitudinaux (L) des conduits (16, 17) qui s'étendent de l'enveloppe du corps de vanne (13) au centre du corps de vanne.
8. Système d'applicateur (1) selon l'une des revendi-

cations précédentes, **caractérisé en ce que** le siège de vanne (12) est réalisé dans une culasse (40) qui relie les tubes d'expulsion (41) de deux ou plusieurs pompes (39) qui conduisent les substances pompées dans la culasse (40), si la culasse (40) est pressée vers le bas de sorte que les tubes d'expulsion (41) alimentent les conduits internes de la culasse (40), qui, à leur tour, alimentent les conduits internes (16, 17) du corps de vanne (13) lorsqu'il est en position ouverte.

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9. Système d'applicateur (1) selon l'une des revendications précédentes, **caractérisé en ce que** le système d'applicateur (1) comprend du moins deux applicateurs différents (15) dont au moins l'un d'entre eux constitue de préférence un mélangeur statique interne (24), qui, à la discrétion de l'utilisateur, peut être couplé au système de conduits (16, 17, 18, 20, 21) afin d'être tenu à l'intérieur pour être alimenté avec les du moins deux substances de telle manière que les du moins deux substances se mêlent uniformément à l'intérieur du au moins un applicateur (15).
10. Système d'applicateur (1) selon l'une des revendications précédentes, **caractérisé en ce que** l'un des applicateurs (15) porte des poils ou dents (28) et a une multiplicité d'embouchures de sortie (27) qui distribuent le mélange des substances à appliquer entre les poils ou les dents (20).
11. Système d'applicateur (1) selon l'une des revendications précédentes **caractérisé en ce que** du moins l'un des applicateurs (15) porte un flocage.
12. Système d'applicateur (1) selon l'une des revendications précédentes **caractérisé en ce que** du moins l'un des applicateurs (15) porte une surface d'essuyage nue sans poils, dents, doigts ou flocage.
13. Système d'applicateur (1) selon l'une des revendications précédentes **caractérisé en ce que** du moins l'un des applicateurs (15) est un applicateur d'étalement ou de dispersion uniquement et non un applicateur à alimentation interne ayant un passage pour la substance à appliquer passant à travers l'applicateur, tandis que du moins un autre applicateur alternatif est un applicateur à alimentation interne.

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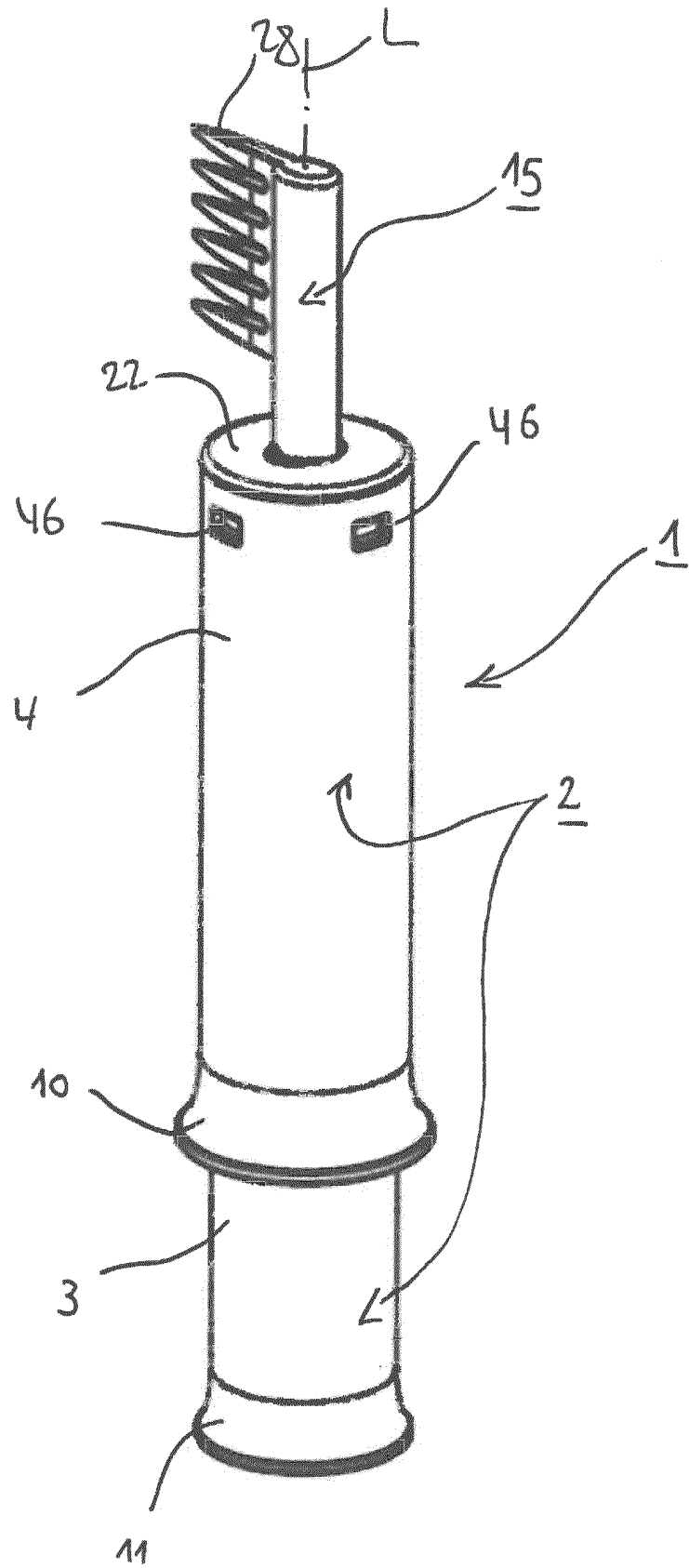


Fig. 1

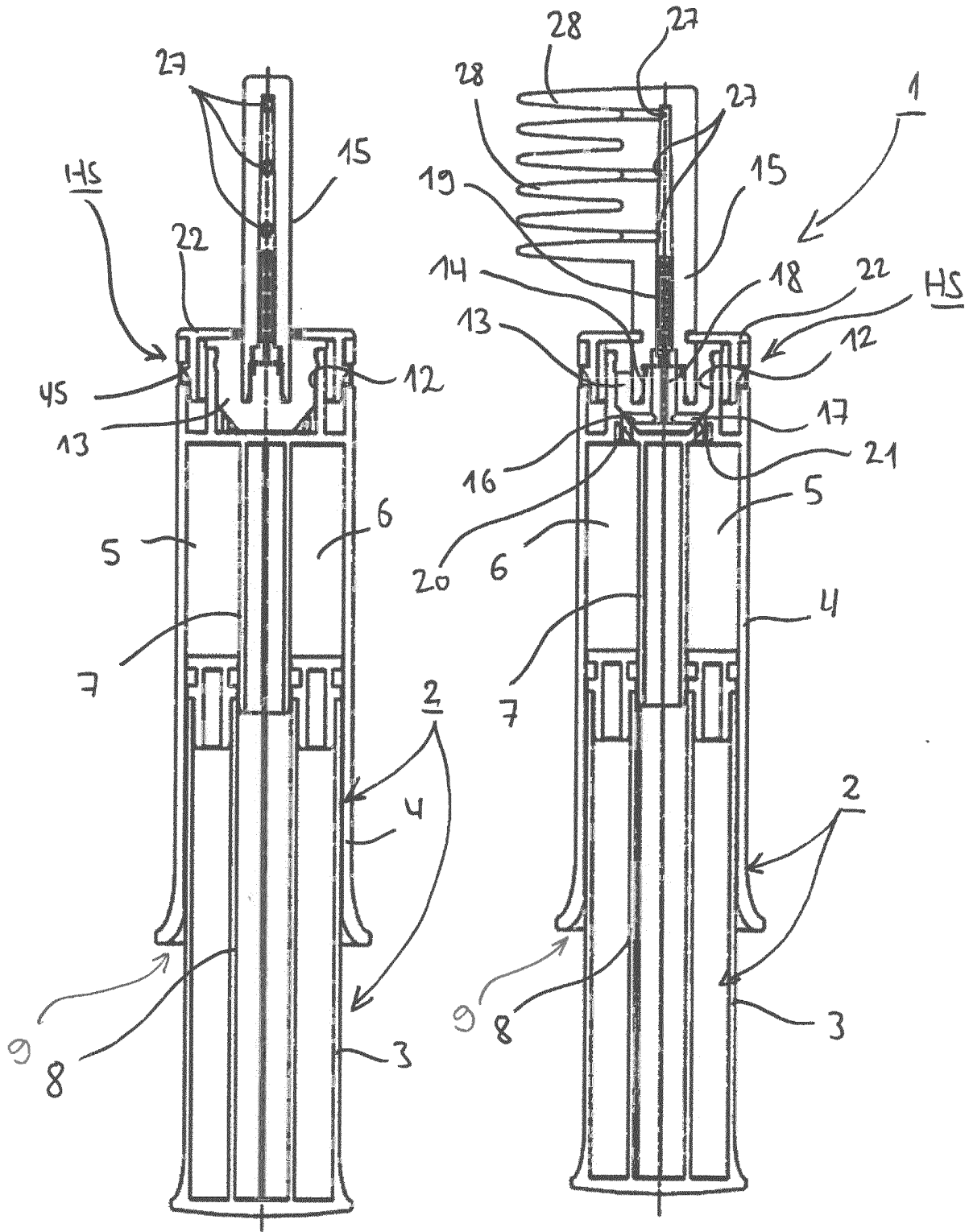
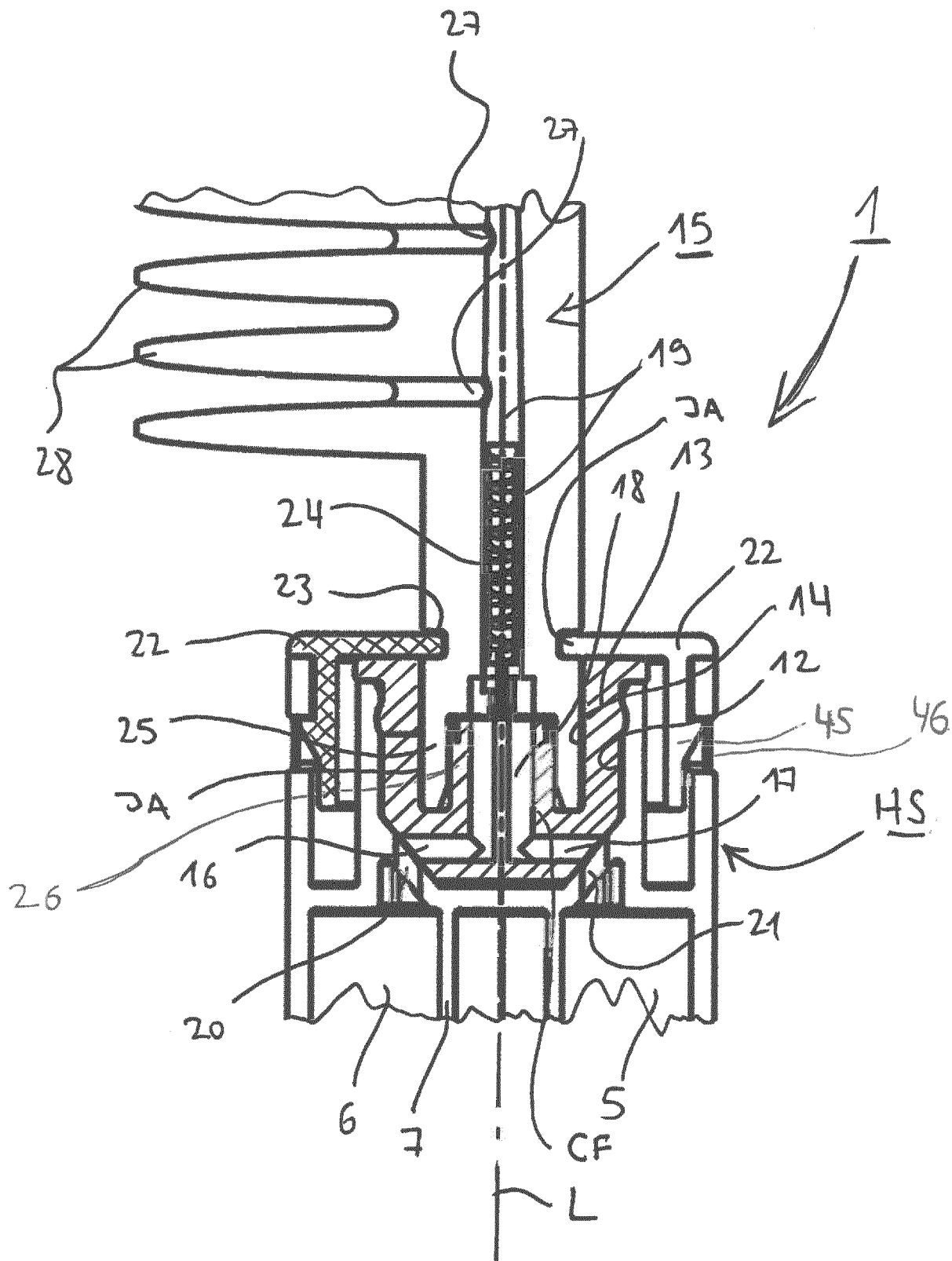
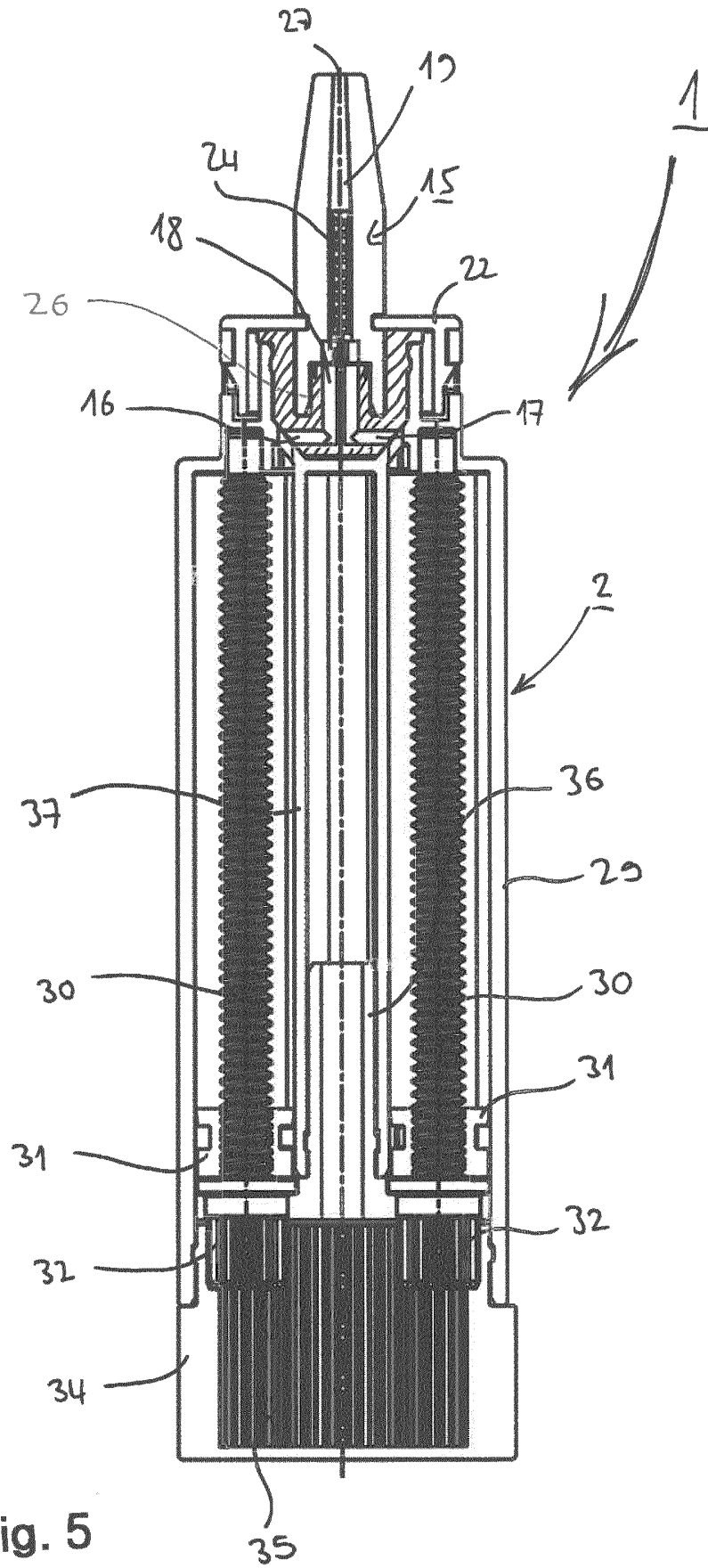


Fig. 2

Fig. 3





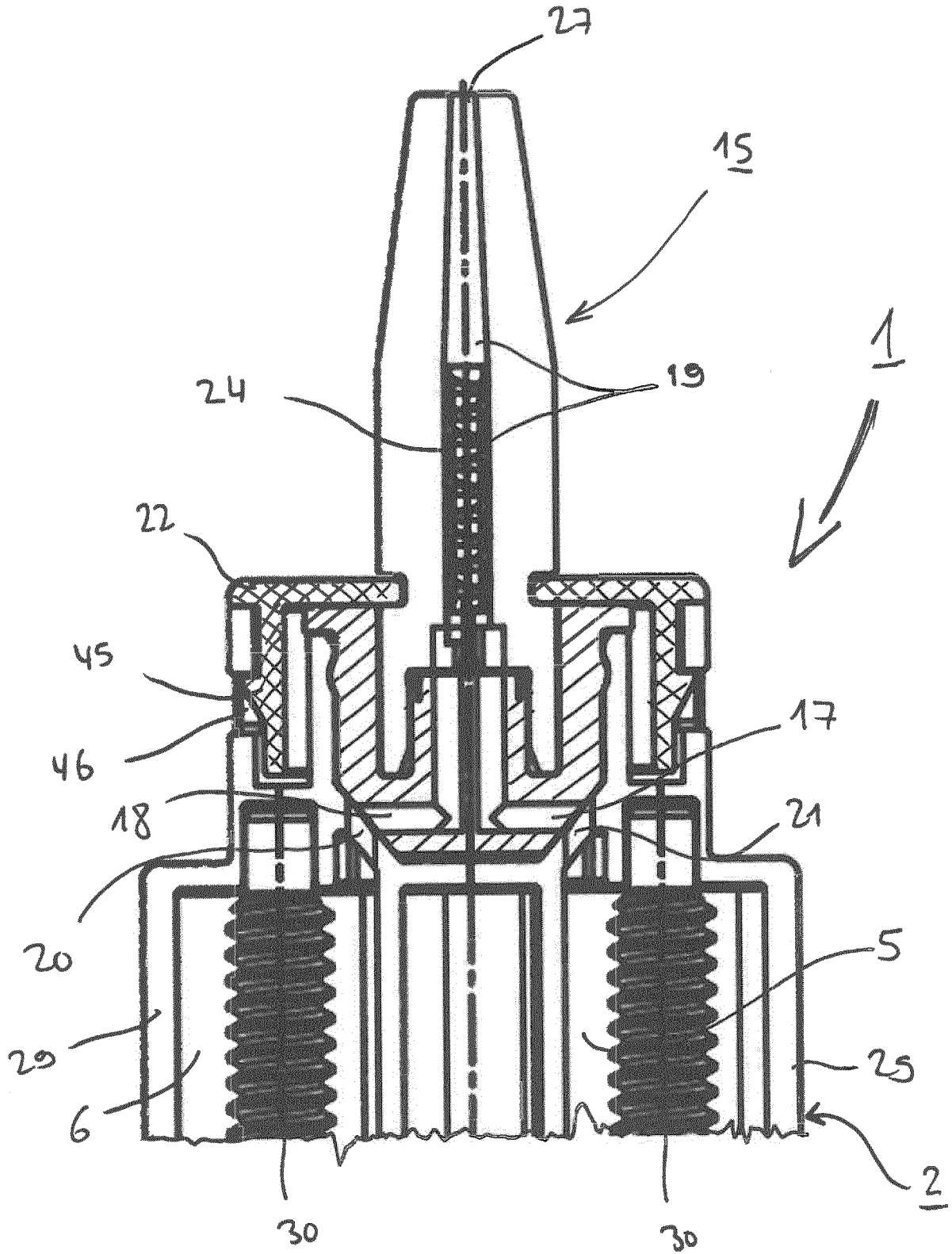


Fig. 6

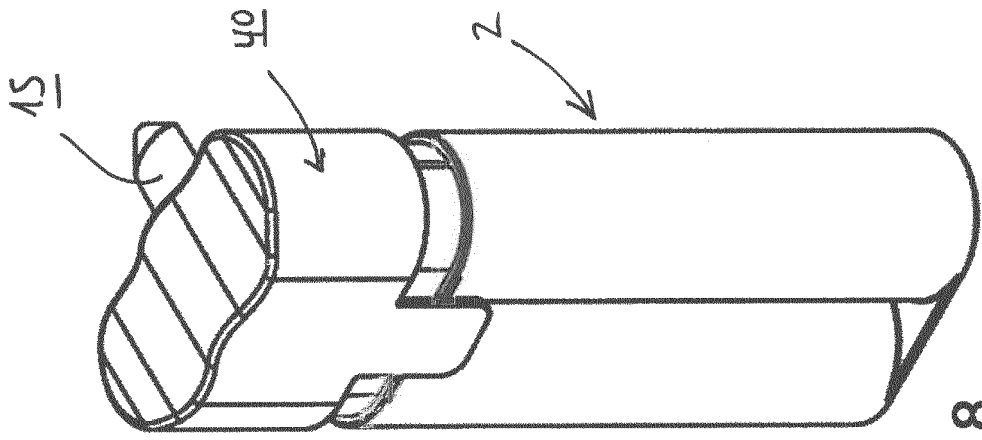


Fig. 8

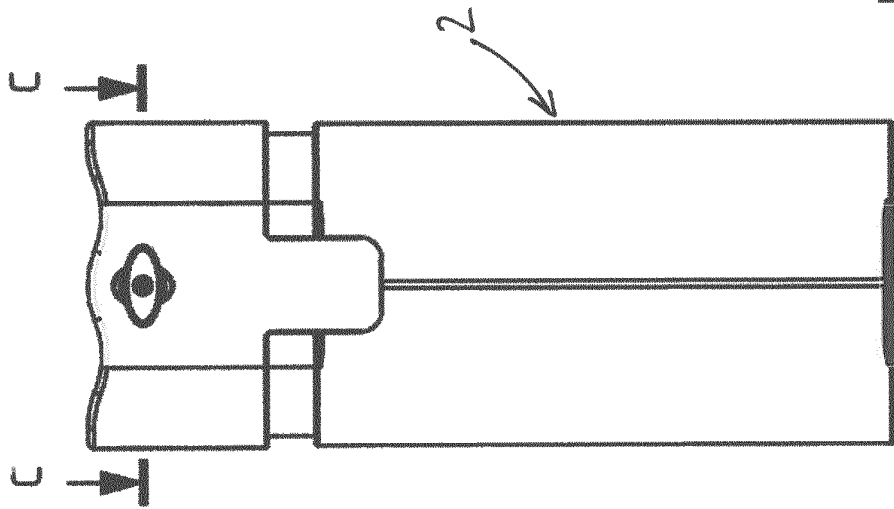


Fig. 7

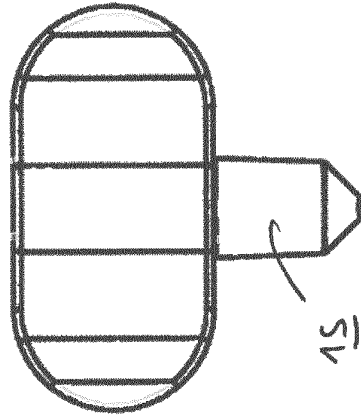


Fig. 9

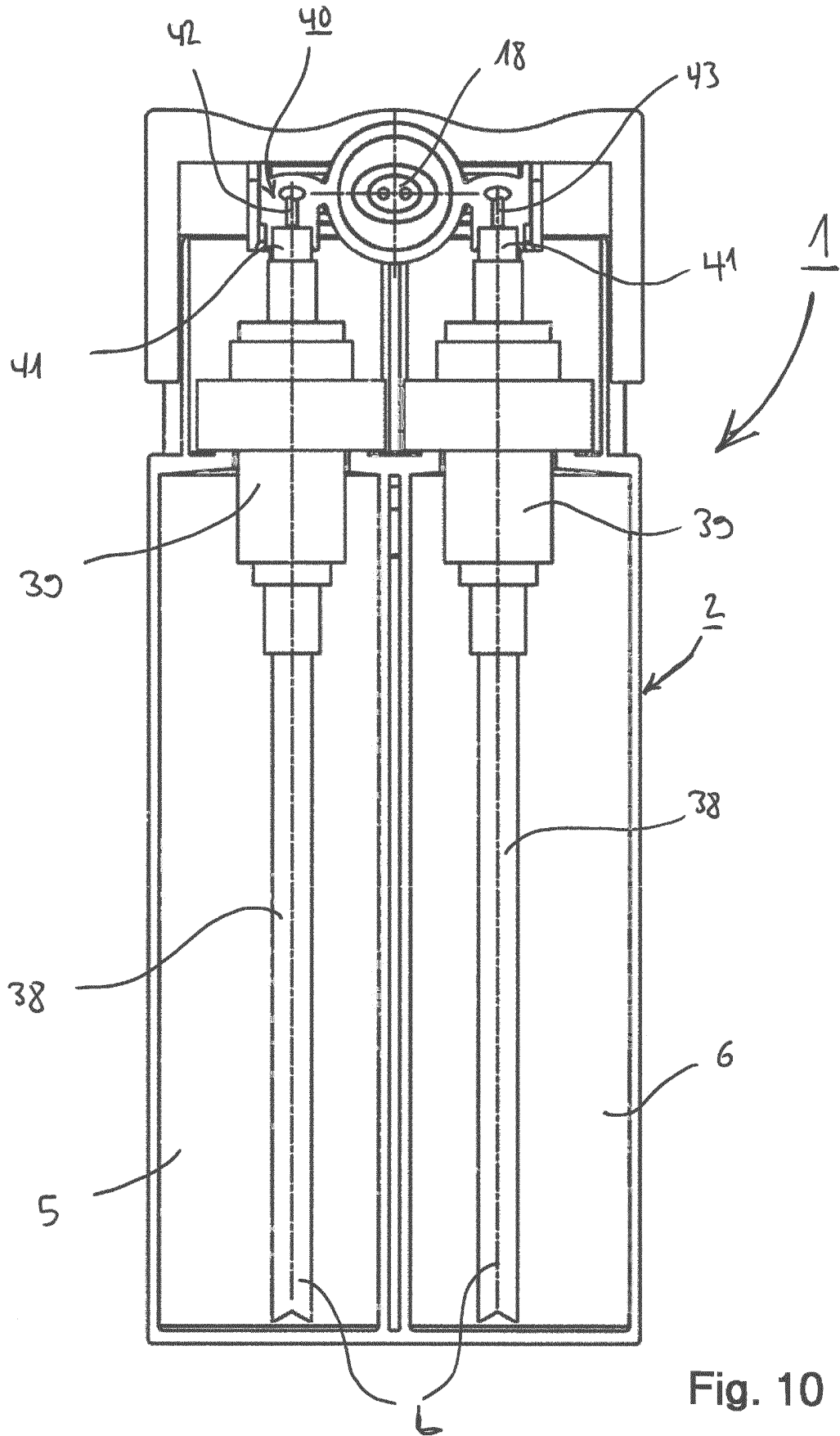


Fig. 10

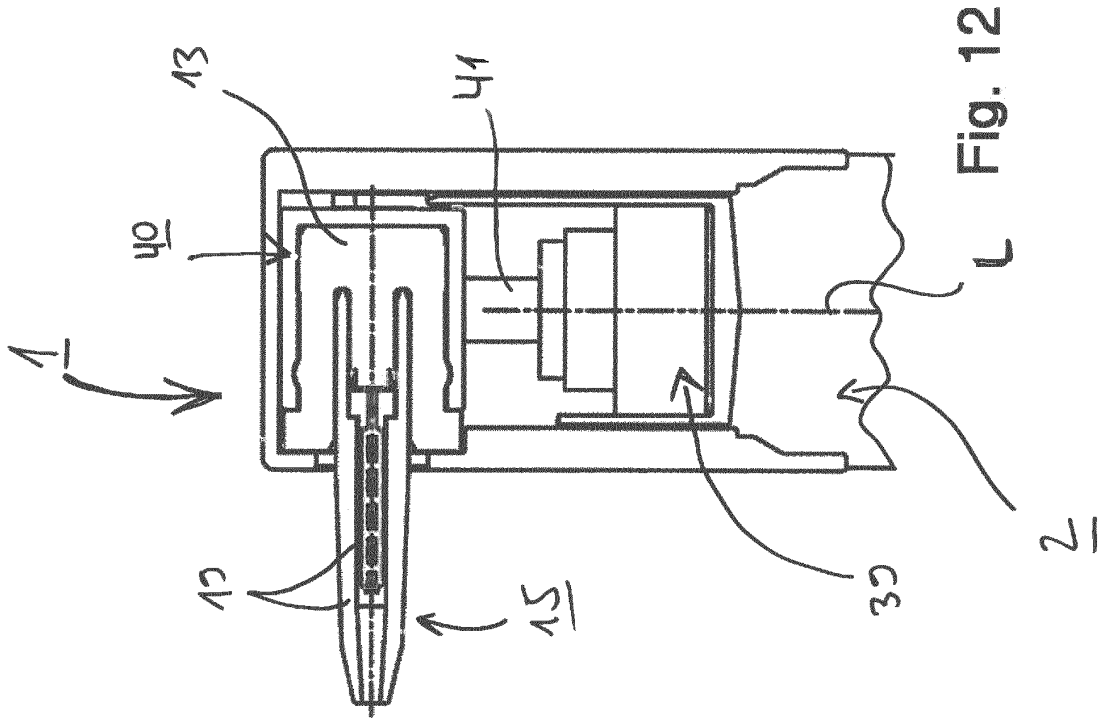


Fig. 12

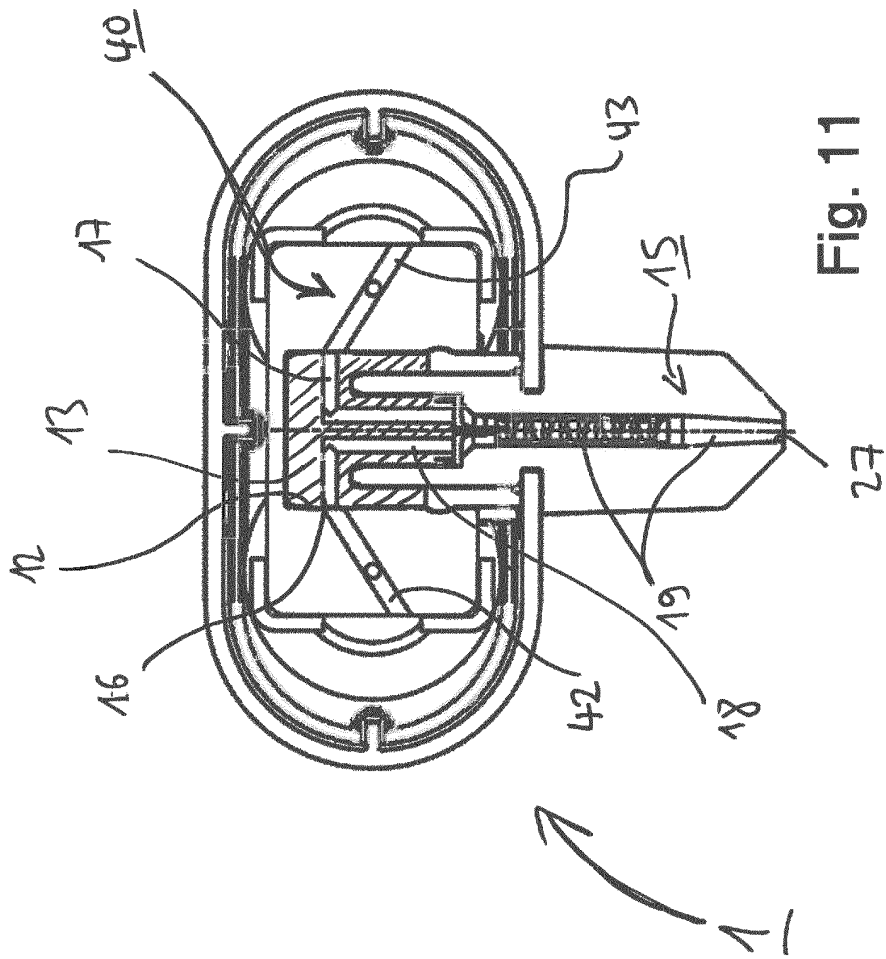


Fig. 11

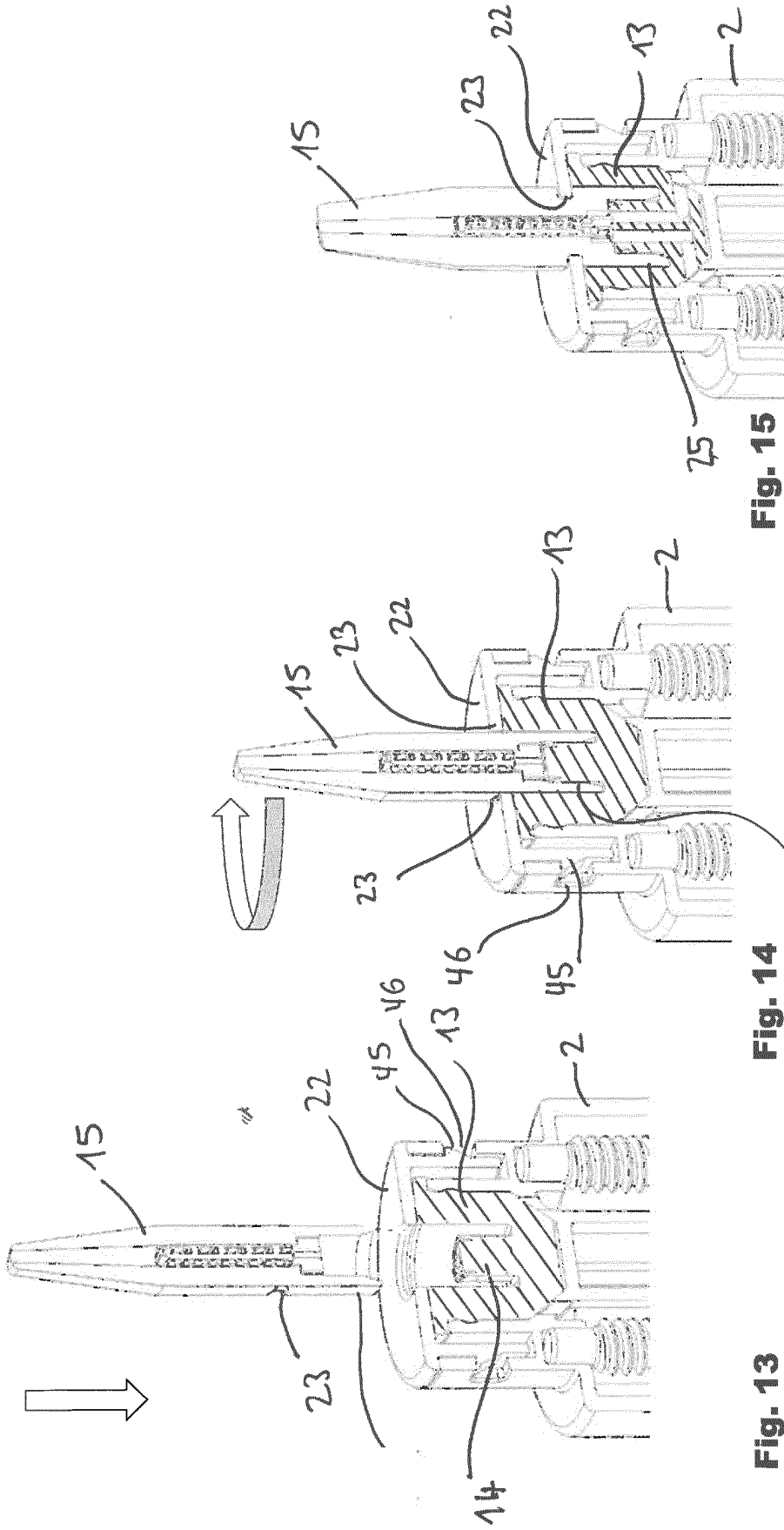


Fig. 15

Fig. 14

Fig. 13

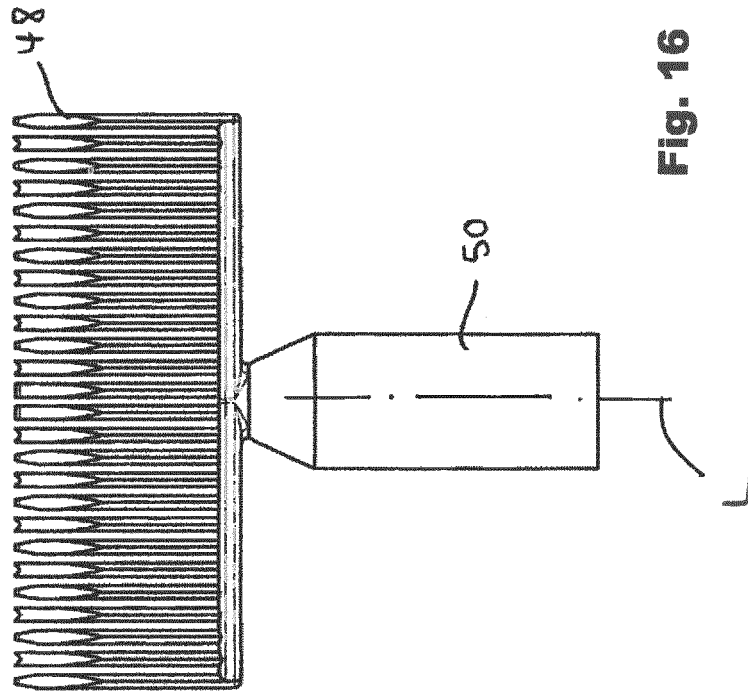


Fig. 16

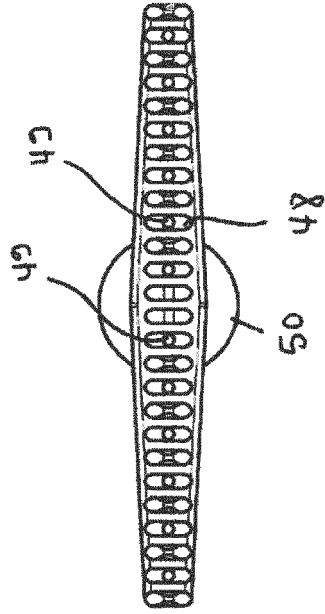


Fig. 16a

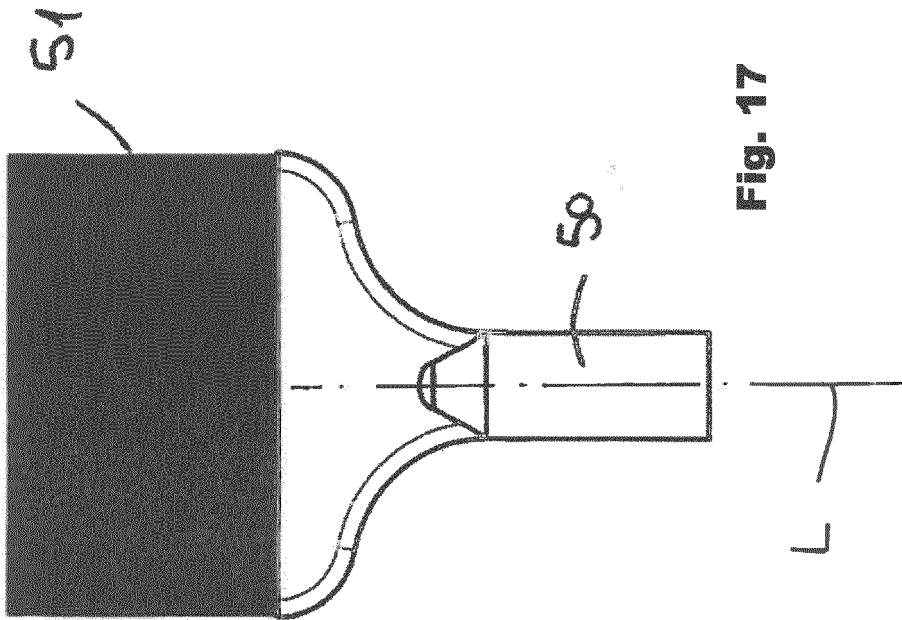


Fig. 17

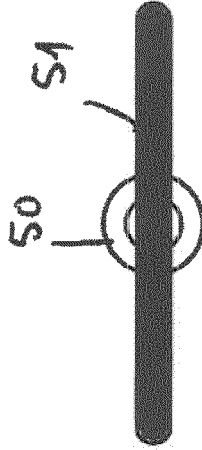


Fig. 17a

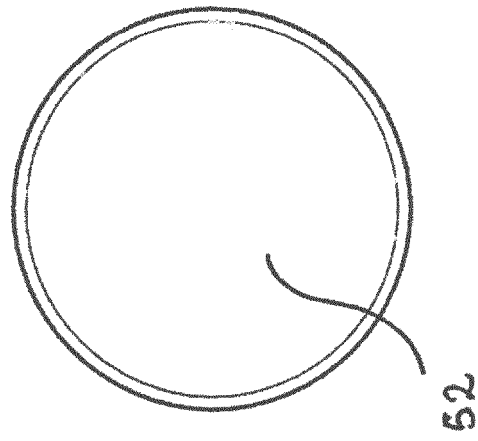


Fig. 18a

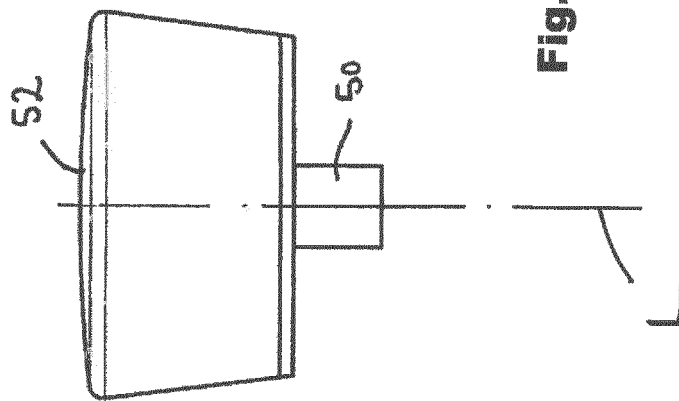


Fig. 18

REFERENCES CITED IN THE DESCRIPTION

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