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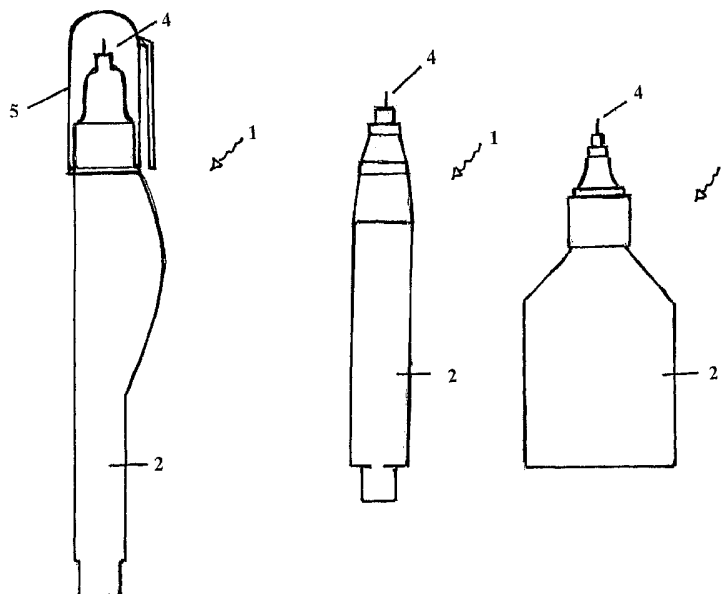
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(54) Title: PAINT APPLICATOR



(57) Abstract: This invention relates to a paint applying tool. In particular, the paint applying tool is envisaged to be suitable for fine body paint repair in the automotive and building industries and other activities where paint maintenance and quality or unblemished paint appearance is specifically desirable. The applicator includes at least one reservoir for holding said fluid, a dispensing nib for controlled dispensing of the contents of the reservoir onto the surface, and a mixing mechanism within the reservoir to maintain the fluid in an applicable state. The applicator is characterised in that the dispensing nib is a fine, pressure sensitive dispensing nib capable of dispensing millilitre amounts of the fluid at a time

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PAINT APPLICATOR

Technical Field

This invention relates to a paint applying tool.

- 5 In particular, the paint applying tool is envisaged to be suitable for fine body paint repair in the automotive and building industries and other activities where paint maintenance and quality or unblemished paint appearance is specifically desirable.

Background Art

- 10 A number of methods and apparatus are available for use in painting, touch-up techniques and similar to repair, maintain or enhance the paint work finish on an object or surface

- A number of patents are directed to such systems, including systems whereby a pen is provided with a stiff fibre tip (similar to conventional fibre tipped pens) having the required dimensions. The pen includes a reservoir which is filled with automobile paint or lacquer of a required colour and quality. Alternatively, the pen may include a rotatable portion adjacent
15 bristles to which paint is applied from the nozzle of the pen; the paint is transferred from the bristles to the rotatable portion enabling a narrow line of paint to be applied to the surface being painted.

- Similar pen-like systems have been adapted for applying rust converting liquids to a surface. The reservoir of the pen includes substantially flexible walls and a dispensing tip assembly.
20 The tip assembly includes a valve which can be opened to allow fluid flow by the depressing a spring loaded tip against the surface to which the liquid is to be applied. Squeezing the flexible walls of the reservoir facilitates liquid flow.

- To further improve the paint delivery, various systems have been devised to improve application of the paint with its appropriate solvents to ensure a preferred viscosity, and have
25 also included adaptation of the nib/nozzle of the pen to enable the paint to be applied as required.

The foreseeable advantages of using such paint applicators are to address problems of the need to have expensive paint spraying equipment (including airbrushing equipment), and the

versatility such paint applicators have over aerosol type paint applicators where paint or other solutions may be applied to a greater area than required.

However, disadvantages with the systems discussed above are that the fibre tip systems do not offer a fine enough delivery of paint to apply to minor scratches and so increases the likelihood that the repair work is noticeable often not a desired outcome. The rotatable portion pens, modified ball-point pen systems and such like may similarly not be easy to use where a scratch (or minor repair work) does not simply conform to a straight line scenario. Lastly, because of the components of paint the nib/delivery mechanisms can be difficult to clean or become clogged and so single applications may be all that is possible from one applicator.

The objective of the invention is to provide a handy paint applicator for petite paint cuts such as stone chips or slight scratches and similar damages.

Accordingly, while the present invention has a number of potentially realisable applications, it is in relation to providing an alternative paint applicator arrangement that the present invention was developed. More specifically, it was with the problems associated with the design, operation and current use of existing paint and paint repair systems in mind, that the present invention was developed. Further, it is with the potential for providing a reusable alternative to existing non-reusable systems and to enable the paint applicator to be used over a prolonged period that the invention was developed.

It is with these objectives in mind that it would be useful therefore, to have a paint applicator in the form of a pen applicator which provides:

- a) directed application of paint to only the desired area and thereby minimised paint waste and application of paint to areas where it was not required ; and
- b) improved control of the application; and/or
- c) enabled successive applications to an area as required to fill in the scratched or damaged area with the paint; and/or
- d) a system which can be carried by owners and/or maintenance professions over prolonged periods for use as and when required; and/or

- e) access to an applicator system in which clogging could be minimised; and/or
- f) a system where the viscosity of the paint could be maintained for application at any time; and/or
- g) an optional system where more than one paint reservoir was included in the pen for maximising utility of the paint applicator; and/or
- h) an easy and safe system to operate; and/or
- i) enabled the pen to be multifunctional – operating as a paint applicator and a normal writing pen, or a rust treating system in the one unit.

It would be advantageous to have an invention that offered at least some if not all of the advantages of the above proposed paint applicator. Therefore, it is an object of the present invention to consider the above problems and provide at least one solution which addresses a plurality of these problems.

It is therefore a further object of the present invention to at least provide the public with a useful choice or alternative system.

Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only. It should be appreciated that variations to the described embodiments are possible and would fall within the scope of the present invention.

All references, including any patents or patent applications, cited in this specification are discussed in relation to what their authors assert and do not constitute an admission by the applicant as to the accuracy or validity of the cited documents. It will also be clearly understood that, although this prior art discussion includes a comparison of various systems with reference to the present invention this does not mean the present invention is included as part of the common general knowledge in the specific art of the present inventive field, in New Zealand or in any other country.

It is acknowledged that the term 'comprise' may, under varying jurisdictions, be attributed with either an exclusive or an inclusive meaning. For the purpose of this specification, and unless otherwise noted, the term 'comprise' shall have an inclusive meaning - i.e. that it will

be taken to mean an inclusion of not only the listed components it directly references, but also other non-specified components or elements. This rationale will also be used when the term 'comprised' or 'comprising' is used in relation to one or more steps in a method or process.

- 5 Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only.

Disclosure of Invention

- According to one aspect of the present invention there is provided an applicator for applying at least one fluid to a surface, said applicator including at least one reservoir for holding said
10 fluid, a dispensing nib for controlled dispensing of the contents of the reservoir onto the surface, and a mixing mechanism within the reservoir to maintain the fluid in an applicable state.

- According to another aspect of the present invention substantially as described above the fluid applied by the applicator primarily includes paint and lacquer, although other relevant
15 fluids may be applied, such as ink, anti-rust formulations and the like.

The paint/lacquer used is preferably solvent-based automotive paint/lacquer which has been diluted with thinners to allow for free flowing in all applications. The paints preferred for use with the applicator include Polyester Basecoat, Polyester Enamel and Acrylic Lacquer.

- 20 The appropriate mix of the fluid and its solvent is required to maintain the ability of the applicator to perform over an extended time. The solvent used and the quantity will be dependent on the fluid type used, whether paint, ink, rust-treating or rust-inhibiting formulations, and so forth.
- 25 For the purpose of the present description the applicator may be referred to as a pen on the basis that it includes a number of features typically associated with a pen and its configuration is designed to be pen-like for ease of handling. However, use of this term is not to be considered limiting.

The applicator also includes a cap for placement over the dispensing nib when the pen is not in use. The cap contributes to maintaining the fluid consistency in the reservoir by minimising entry of air through the nib and into the reservoir. The cap also serves as protection for the dispensing nib and acts as a barrier to contain some degree of leakage of the contents of the reservoir if the reservoir is compressed. The cap also separates the nib from the environment to prevent the nib from clogging. In preferred embodiments, the cap is made of thermoplastic materials. However, any suitable material may be used. Further, the cap optionally includes a clip to facilitate carrying of the applicator in a pocket, case or the like. The cap may also include a coloured mark and/or other indicator on any one of its surfaces to indicate not only the shades of the contents, but the type of fluid the applicator contains.

The reservoir is configured as required to accommodate the quantity of fluid required to fulfil the application parameters of the pen. Some reservoirs may be tubular and elongate. Others may be substantially flattened, shorter and rectangular. As can be appreciated the configuration of the reservoirs may be determined by any preferred factors relevant to the pen's specific application. The volume of fluid contained in the reservoir may also vary.

The size and shape of the reservoir are variable for different applications - from a pen shape for automotive stone chip repair to a small bottle shape for larger applications. The smaller pen-type applicator preferably holds approximately 8 millilitres of paint and the larger bottle shaped applicators may hold up to or more than 18mls.

The reservoir includes walls which are preferably substantially flexible at least in part. The flexibility of the reservoir is preferred to facilitate delivery of the fluid through the dispensing nib as may be required from time to time (such as when the contents of the reservoir are running low). Contribution to delivery of the fluid by the user may be achieved by squeezing, depressing the reservoir walls.

In one embodiment, the reservoir is the body of the pen. In other embodiments the pen may have an external body with internal reservoirs positioned therein. In the latter embodiment the body or casing may accommodate different volumes or varying number of reservoirs dependent on the preferred utilisation.

Preferably the body/casing and the reservoirs are made of suitable thermoplastic materials, capable of withstanding any solvents of the fluid to be applied. A plastic reservoir and/or a plastic casing provide a suitable reservoir for paint storage and is moreover suited for handholding. The moderate softness in the reservoir/casing enables the applicator to be squeezable for applying larger amount of paint and at the same time to offer a better touch/feel control component for the user. In some embodiments the shape of the body casing and/or reservoir may provided an area to which pressure may be applied to contribute to dispensing of the liquid.

The dispensing nib is preferably a fine, pressure sensitive nib capable of dispensing milligram/millilitre amounts of the fluid (such as paint) at a time. The nib is also preferably configured to dispense the fluid to form a smooth trail and via an even flow to meet the requirement of delicate mending requirements of the surface being attended to.

In preferred embodiments of the present invention, the dispensing nib is and includes a stainless steel, spring loaded, needle valve or roller ball type mechanism. Preferably, the spring-loaded needle-type tip is used as it is capable of more successful applications over a long period, namely 1-2 years, as it does not clog and still allows paint to be dispensed in a greater range of delivery quantities, from the smallest of droplets up to larger amounts for scratches and the like. However, any suitable dispensing nib may be used with, or adapted for use with the present invention.

The mixing mechanism of the present invention is a moveable unit within the body of the reservoir which contributes to ensuring the contents of the reservoir are appropriately mixed for optimum application. In one embodiment of the present invention, the mixing mechanism is a pellet or metal, ceramic or other suitable material. The shape and dimensions of the pellet are variable depending on the size of the reservoir and the fluid therein. Typically, the pellet is sealed in the reservoir/casing to facilitate the paint-solvent mixing by shaking the applicator before applying the paint to a surface. However, other suitable mixing mechanisms may be used with or adapted for use with the present invention.

Applicators with assorted fluid colours or contents may be assembled in toolkits of various sizes to suit applications from industrial to household purposes.

It is envisaged that the primary use for the pen is in the automotive trade, as a stone chip repair pen and would offer an alternative to the touch up bottles currently provided in new and used cars. However, it is envisaged the pen will have other applications for:

- 5 a) Scratch repair on ferrous and non ferrous metals, including anodised and powder-coated aluminium used in the manufacturing of joinery.
- b) The roofing industry for scratch repair by roofing fixers.
- c) Fibreglass repair from chipping (due to stone or minor accident damage and for cosmetic repair).

10

As such, the applicators will be available in assorted colours as single pens, and in kits of various quantities for car sales yards, roofing contractors and the like who require many different colours.

- 15 A potentially realisable advantage of the present invention is that the fine detail application of the fluid to a scratch on a surface can enable successive coats to be applied in similar fine detail to enable the depth of the scratch to be filled in. The configuration of the applicator and the mixing of the solvent and base fluid enables successive applications to be applied to an area in a consistent manner.

- 20 Further, the present system provides an alternative which can be carried by owners and/or maintenance professions over prolonged periods for use as and when required.

- To improve the functionality of the applicator, the inclusion of two reservoirs provided such as to create a double ended pen, or a multiple delivery pen is also considered and included within the scope of the present invention. The pen in such cases would be adapted to include
25 both one paint/fluid reservoir deliverable through one dispensing nib, and second reservoir deliverable through its own independent dispensing nib. The dispensing nibs may be at opposite distal ends of the applicator, or be adjacent to each other at only one end of the applicator.

- 30 In addition the ability to use the applicator as a standard writing implement as well as a paint applicator or the like, is also envisaged. The pen in such cases would be adapted to include

both a paint/fluid reservoir deliverable through one dispensing nib, and an ink reservoir deliverable through its own independent dispensing nib.

To further improve the present invention the design of the pen may be adapted to enable
5 refilling of the reservoir, or replacement of one reservoir with another, whilst still retaining use of the original dispensing nib.

Brief Description of Drawings

Further aspects of the present invention will become apparent from the following description
10 which is given by way of example only and with reference to the accompanying drawings in which:

Figure 1 is a diagrammatic representation of one embodiment of the pen applicator of the present invention; and

Figure 2 is a diagrammatic representation of another preferred embodiment of the pen
15 applicator of the present invention; and

Figure 3 is a diagrammatic representation of another preferred embodiment of the pen applicator of the present invention.

Best Modes for Carrying out the Invention

With reference to the diagrams (Figures 1 to 3) by way of example only there is provided an
20 applicator (as illustrated by general arrow 1) for applying at least one fluid to a surface (not shown).

The fluid is used to repair or maintain a damaged surface and includes one or more of paint, lacquer, ink, anti-rust formulations.

The applicator 1 includes at least one reservoir 2 for holding the fluid. The sizes and shapes
25 of the reservoir 2 are variable for different applications - from a pen shape for automotive stone chip repair to a small bottle shape for larger applications. The smaller pen-type applicator preferably holds approximately 8 millilitres of paint and the larger bottle-shaped applicators may hold up to or more than 18mls.

The reservoir includes walls which are preferably substantially flexible at least in part. The flexibility of the reservoir is preferred to facilitate delivery of the fluid through the dispensing nib as may be required from time to time (such as when the contents of the reservoir are running low). Contribution to delivery of the fluid by the user may be achieved
5 by squeezing, depressing the reservoir walls.

The applicator also includes a mixing mechanism 3 within the reservoir to maintain the fluid in an applicable state. In one embodiment of the present invention, the mixing mechanism is a pellet or metal, ceramic or other suitable material. The shape and dimensions of the pellet are variable depending on the size of the reservoir and the fluid therein. Typically, the pellet
10 is sealed in the reservoir/casing to facilitate the paint-solvent mixing by shaking the applicator before applying the paint to a surface.

In one embodiment, the reservoir is the body of the pen. In other embodiments the pen may have an external body with internal reservoirs positioned therein. In the latter embodiment the body or casing may accommodate different volumes or varying number of reservoirs
15 dependent on the preferred utilisation.

The reservoir may be replaceable or refillable when empty.

The body of the pen-like applicator whether it is operating as the reservoir, or whether it encloses a fluid reservoir, is adapted at one distal end to receive the fluid dispensing nib.

The fluid dispensing nib 4 is important for controlled dispensing of the contents of the
20 reservoir onto the surface. The dispensing nib 4 is preferably a fine, pressure sensitive nib of stainless steel and includes a spring-loaded, needle valve mechanism to allow the fluid to be dispensed in a greater range of delivery quantities, from the smallest of droplets up to larger amounts for scratches and the like.

25 The fluid dispensing nib includes a housing having a through passageway between inlet and outlet ends and is attachable to either or both the body of the pen-like applicator and/or a reservoir at the inlet end of the fluid dispensing nib

The through passageway of the fluid dispensing nib is in communication with the reservoir. The dispensing nib receives fluid through the passageway via external pressure applied to the flexible walls of the reservoir by the user.

However, the through passageway of the fluid dispensing nib is in communication with a valve member within the passageway adapted for sealing the passageway when the applicator is not in use. In some embodiments, the dispensing nib includes a pressure sensitive moveable tip adapted to project through the outlet end of the passageway when the valve member is in sealing engagement with the passageway, and biasing means operable by the moveable tip biases the valve member to an open position on application of pressure to the tip when the tip is applied to a surface, thereby enabling movement of the liquid through the passageway and on to the surface.

In other embodiments, the pressure sensitive moveable tip is configured to operate as a closed valve itself when the tip is projecting through said outlet end of the passageway and moves to an open position on application of pressure to the tip when the tip is applied to a surface thereby enabling movement of the liquid through the passageway and on to the surface.

The applicator also includes a protective cap 5 having a clasp capable of being hooked on to a belt, shirt pocket or the like (for facilitating ready accessibility of the applicator when required).

The applicator is designed to hold up to or between 8 millilitres and 18 millilitres for smaller repair applicators. The larger sized applicators, whilst available, become less easy to handle to achieve the fine applications often required when repairing minor damage to a coated surface.

The performance of the applicator is dependent on the appropriate mix of the fluid. The solvent/fluid ration is relevant to the fluid being applied. Too much solvent and the fluid does not operate to successfully repair the surface; too little solvent and the fluid does not run as smoothly as is required for fine detail work.

The present invention is directed to adapting paint/lacquer, rust treating formulations for use with an applicator which can dispense a very fine detail to repair a scratch or similar damage

on a surface and to be operable over a prolonged period of time, in a manner which avoids overuse of the fluid, messy applications, problems with clotting or fluids that only have a short application life. In addition, the present invention is directed for use by an individual without having the expense of costly or specialised equipment.

- 5 It should be appreciated that the present invention lends itself to providing customised handlebar portions to meet the specific requirements of individual riders. Accordingly, the description herein has provided several examples of how various components of the steering apparatus may have alternative forms/configurations. Nevertheless, it should also be appreciated that variations other than those exemplified are possible and would similarly fall
10 within the scope of the present invention.

It is again reiterated that the term “comprise” when used herein is not to be considered to be used in a limiting sense. Accordingly, ‘comprise’ does not represent nor define an exclusive set of items, but includes the possibility of other components and items being added to the list.

- 15 This specification is also based on the understanding of the inventor regarding the prior art. The prior art description should not be regarded as being an authoritative disclosure of the true state of the prior art but rather as referring to considerations in and brought to the mind and attention of the inventor when developing this invention.

- Aspects of the present invention have been described by way of example only and it should
20 be appreciated that modifications and additions may be made thereto without departing from the scope thereof, as defined in the appended claims.

THE CLAIMS DEFINING THE INVENTION ARE:

1. An applicator for applying at least one repairing fluid to a damaged surface, said applicator including at least one reservoir for holding said fluid, a dispensing nib for controlled dispensing of the contents of the reservoir onto the surface, and a mixing
5 mechanism within the reservoir to maintain the fluid in an applicable state, said applicator characterised in that the dispensing nib is a fine, pressure sensitive dispensing nib capable of dispensing millilitre amounts of the fluid at a time
2. An applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 1 wherein the fluid applied by the applicator includes one or more of paint, lacquer,
10 ink, anti-rust formulations.
3. An applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 2 wherein the applicator is a dispenser having a pen-like body configuration.
4. An applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 3 wherein the body of the pen-like applicator is or encloses a fluid reservoir, the body
15 having resiliently flexible walls and having one distal end adapted to receive the fluid dispensing nib.
5. An applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 4 wherein the reservoir includes a mixing mechanism used for ensuring the fluid in the reservoir is appropriate for dispensing
- 20 6. An applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 4 wherein the fluid dispensing nib includes a housing having a through passageway between inlet and outlet ends and being attachable to either or both the body of the pen-like applicator and the at least one reservoir at the inlet end of the fluid dispensing nib
7. An applicator for applying at least one repairing fluid to a damaged surface as claimed in
25 Claim 6 wherein the through passageway of the fluid dispensing nib is in communication with the reservoir.

8. An applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 7 wherein the dispensing nib receives fluid through the passageway via external pressure applied to the flexible walls of the reservoir by the user.
9. An applicator for applying at least one repairing fluid to a damaged surface as claimed in
5 Claim 8 wherein the through passageway of the fluid dispensing nib is in communication with a valve member within said passageway adapted for sealing the passageway.
10. An applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 9 wherein the dispensing nib includes a pressure sensitive moveable tip adapted to project through said outlet end of the passageway when the valve member is in sealing
10 engagement with the passageway, and biasing means operatable by the moveable tip for biasing the valve member to an open position on application of pressure to the tip when the tip is applied to a surface thereby enabling movement of the liquid through the passageway and on to the surface.
11. An applicator for applying at least one repairing fluid to a damaged surface as claimed in
15 Claim 10 wherein the pressure sensitive moveable tip is configured to operate as a closed valve when the tip is projecting through said outlet end of the passageway and moves to an open position on application of pressure to the tip when the tip is applied to a surface thereby enabling movement of the liquid through the passageway and on to the surface.
12. An applicator for applying at least one repairing fluid to a damaged surface as claimed in
20 Claim 11 wherein the dispensing nib is protected during non-use via a cap, said cap being adapted to engage with either or both the housing of the dispensing nib and the body or reservoir of the applicator and said cap optionally including a clip or similar for facilitating carrying of the applicator.
13. An applicator for applying at least one repairing fluid to a damaged surface as claimed in
25 Claim 1 wherein the reservoir is replaceable or refillable when empty.
14. An applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 1 wherein two or more reservoirs are included to create a double ended applicator, or a multiple delivery pen

15. An applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 14 wherein the applicator is adapted to include both one paint/fluid reservoir deliverable through one dispensing nib, and a second reservoir deliverable through its own independent dispensing nib.

5

16. An applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 14 wherein the dispensing nibs may be at opposite distal ends of the applicator, or be adjacent to each other at only one end of the applicator.

10 17. A method of applying at least one repairing fluid to a damaged surface via an applicator, said applicator including at least one reservoir for holding said fluid, a dispensing nib for controlled dispensing of the contents of the reservoir onto the surface, and a mixing mechanism within the reservoir to maintain the fluid in an applicable state, said applicator characterised in that the dispensing nib is a fine, pressure sensitive dispensing nib capable of
15 dispensing millilitre amounts of the fluid at a time and said method including the steps of:

- a) Positioning the applicator against a damaged area on a surface; and
- b) Applying pressure to the body and/or reservoir of the applicator; and
- c) Delivering a quantity of the fluid onto the damage surface.

18. A kit of applicators for applying at least one repairing fluid to a damaged surface, each of
20 said applicators including at least one reservoir for holding the fluid, said fluid being of a designated composition, and each applicator having a dispensing nib for controlled dispensing of the contents of the reservoir onto the surface, and a mixing mechanism within the reservoir to maintain the fluid in an applicable state, said applicator characterised in that the dispensing nib is a fine, pressure sensitive dispensing nib capable of dispensing millilitre
25 amounts of the fluid at a time.

19. A reservoir of an applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 1..

20. A dispensing nib of an applicator for applying at least one repairing fluid to a damaged surface as claimed in Claim 1.

Figure 1

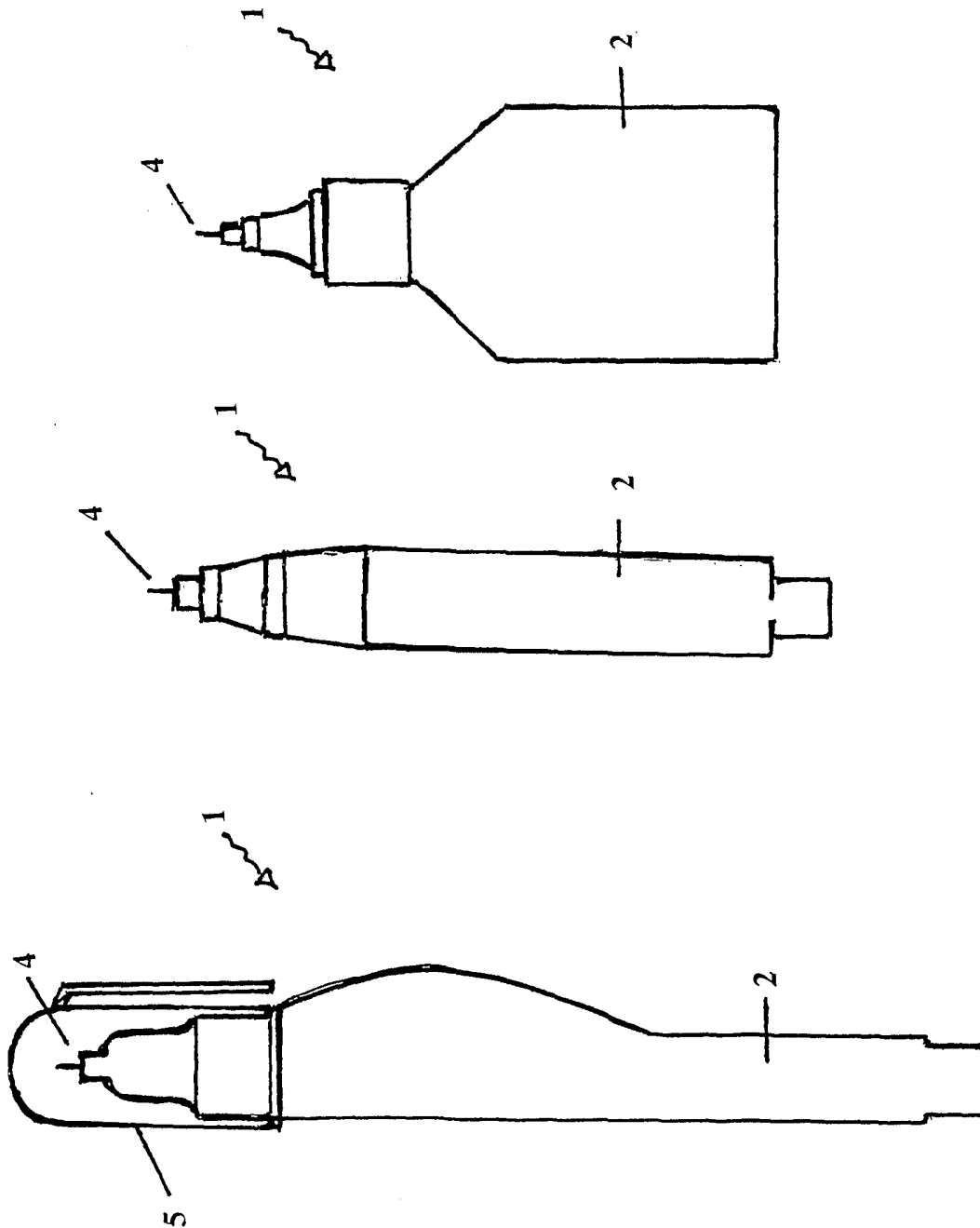


Figure 2

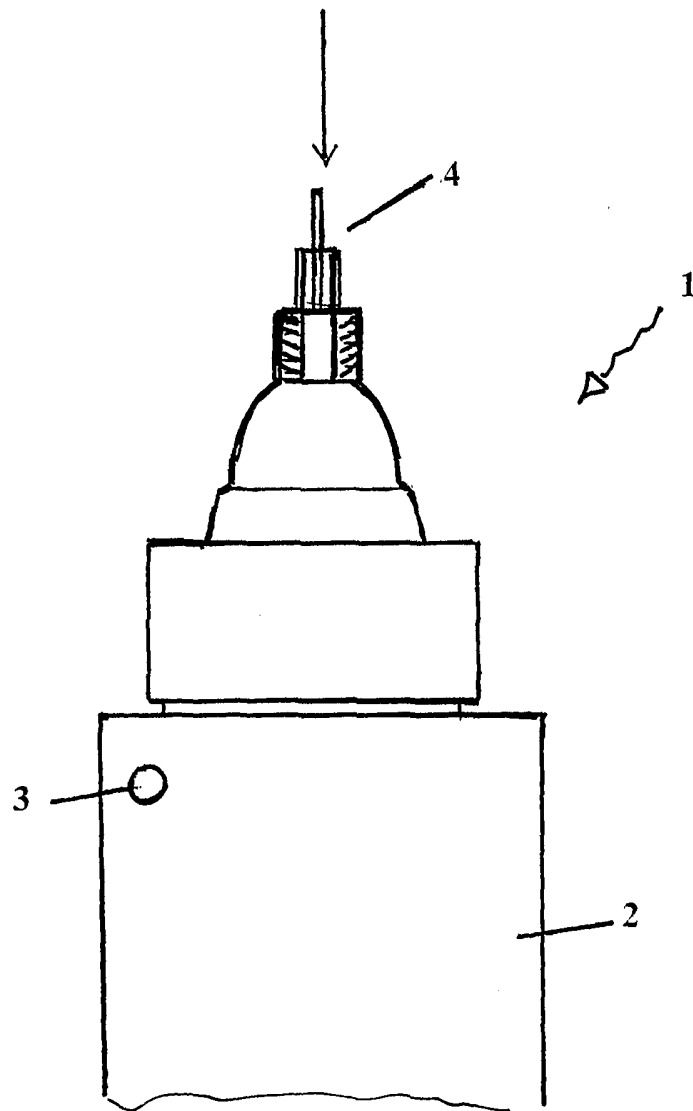


Figure 3

