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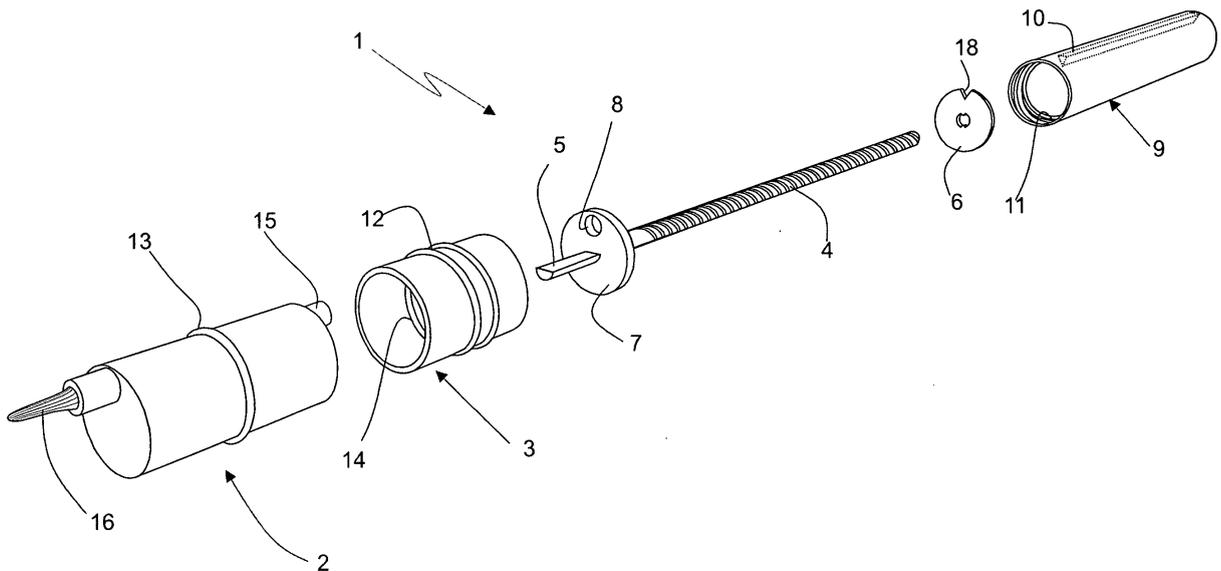
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(54) **Metering brush**

(57) A metering brush (1) comprising compression means (6,7) for pressing a product contained in a body (9) to cause the product to flow out through bristles (16). The means (6,7) move in response to rotation of a head (2) and/or the body (9); the head (2) and body (9) being free to rotate about a common axis of rotation and being axially locked by a ring nut (3).

The means (6,7) include disks inserted and fitted within the body (9); the disk (7) being fixed with respect to the body (9), and the disk (6) being freely displaceable due to the returning action induced by rotation of a rod (4) with a helical groove thereon, in combination with the action of an inner rail (10) in which a corresponding recess (18) in the disk (6) is engaged.

FIG. 1



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Description

[0001] This invention relates to a metering brush for liquid products of various densities.

[0002] Following rotation of the head and/or the main body, and cooperation of inner elements, which are better explained hereafter, the present metering brush allows the product to flow out through the bristles, its flow being exactly adjusted by rotating the above components to various extents.

[0003] The product usually comes out from manually operated bellows-shaped product containers, or from manually squeezable plastic containers; various pressure degrees will produce various flows of the liquid or product of various densities.

[0004] Nevertheless, it will be appreciated from the above that the compressive force, and the amount of ejected product cannot be exactly controlled: the above described art is not exact but only approximate.

[0005] The object of the present invention is to provide a metering brush which obviates the above drawback and allows exact delivery of the product regardless of its density.

[0006] These objects and advantages are achieved by the metering brush of this invention, which is characterized by the content of the annexed claims.

[0007] These and other features will be more apparent from the following description of a few embodiments, which are shown by way of example and without limitation in the accompanying drawings, in which:

- Figure 1 is an exploded view of the metering brush of this invention,
- Figure 2 shows another exploded view of the brush of Figure 1, as viewed from the rear.

[0008] Referring to Figures 1 and 2, numeral 1 generally designates a metering brush of the invention in an exploded view, i.e. with all its components along the main longitudinal axis.

[0009] In this specific embodiment, once the metering brush 1 is assembled, it has a substantially rigid rod-like shape, although this aspect does not intend to limit the inventive scope, as the mechanism disclosed herein might be extended to the application of other brush shapes, e.g. thick shapes.

[0010] In any case, with reference to the illustrated brush, the body 9, which acts as a liquid product container as better described hereafter, has a substantially cylindrical or approximately conical shape, which is closed at one end and has threads 11 on the other, allowing it to be screwed to corresponding threads 12 of a ring nut 3.

[0011] The ring nut 3 has in turn an annular groove 14 formed in its inner wall which is designed to be locked against a corresponding annular protrusion 13 of the head 2 of the metering brush 1; since said groove 14 and protrusion 13 both have an annular shape, the head 2 may be rotated relative to the bush 3, namely about their

common axis: the head 2 and the ring nut 3 being mounted coaxial with each other and with the body 9.

[0012] Therefore, once the body 9 has been tightened on the ring nut 3, with one hand holding such body 9, the head 2 may be rotated, which is critical to cause the product to come out as better explained hereafter.

[0013] The body 9 has a threaded rod 4 therein, with additional means for pressing the contained product, said means including two disks, designated in the figures with numerals 6 and 7.

[0014] The disk 7 is axially fixed with respect to the rod 4 and the body 9, whereas the disk 6 is displaceable in response to the rotation of the rod 4 (and namely of its helical groove), in combination with the action of the inner rail 10 (which is indicated by dashed lines, as it is inside the body 9), followed by the corresponding recess 18 formed on the disk 6.

[0015] A gap is formed between the disk 7 and the disk 6 (and obviously the body 9), which will be filled with the liquid product.

[0016] The end of the rod 4 (turned towards the head 2) is a half-moon shaped extruded part 5, which is fitted in a corresponding cavity 17 on the head 2 and namely when the head 2 is introduced in the ring nut 3.

[0017] Another coupling is formed during assembly between the tube 15 of the head 2, which fits into the hole 8 of the disk 7, thereby allowing the passage of the product from the body 9 to the bristles 16.

[0018] The body 9, with its disks 6 and 7 and the rod 4 substantially forms an interchangeable cartridge.

[0019] To prevent undesired product leakages and guarantee integrity, the hole 8 is held closed by a thin membrane which is designed to be only broken by the above tube 15 introduced therethrough upon first use.

[0020] A cap of suitable shape, not shown, will cover the bristles 16.

[0021] The above metering brush 1 has a simple operation; after removing the cap, the stick - i.e. the body 9, has to be held still while rotating the upper part, or head 2, which holds the bristles 16, to allow the product to come out by compression of the product between the disks 6 and 7 and the shell of the body 9.

[0022] Rotation may also occur in the opposite direction to provide a suction effect, which is advantageous when treating low density products, to prevent product leakages through the bristles.

[0023] While the tuft of bristles 16 as described herein is offset with respect to the axis of the metering brush 1, it can also be centered.

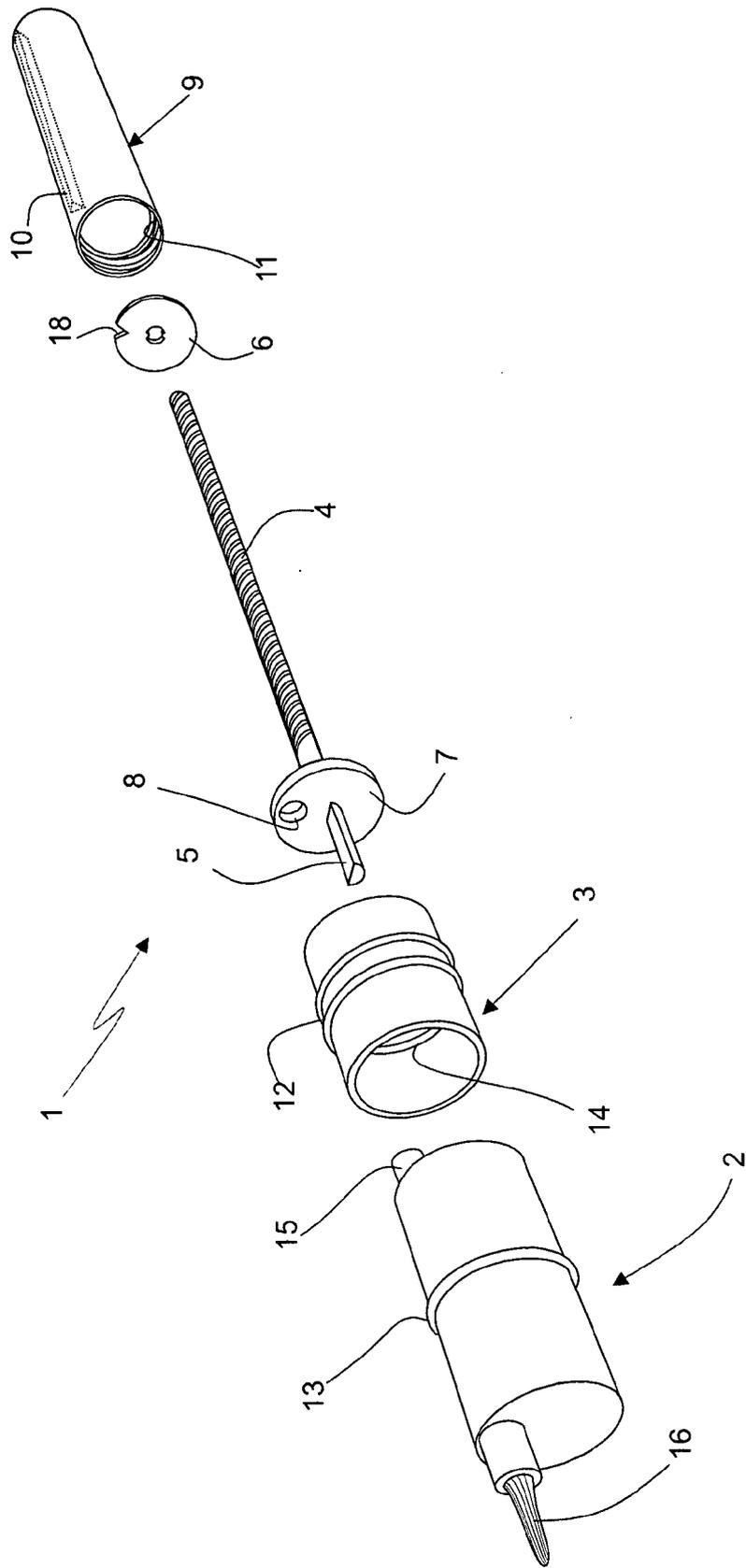
Claims

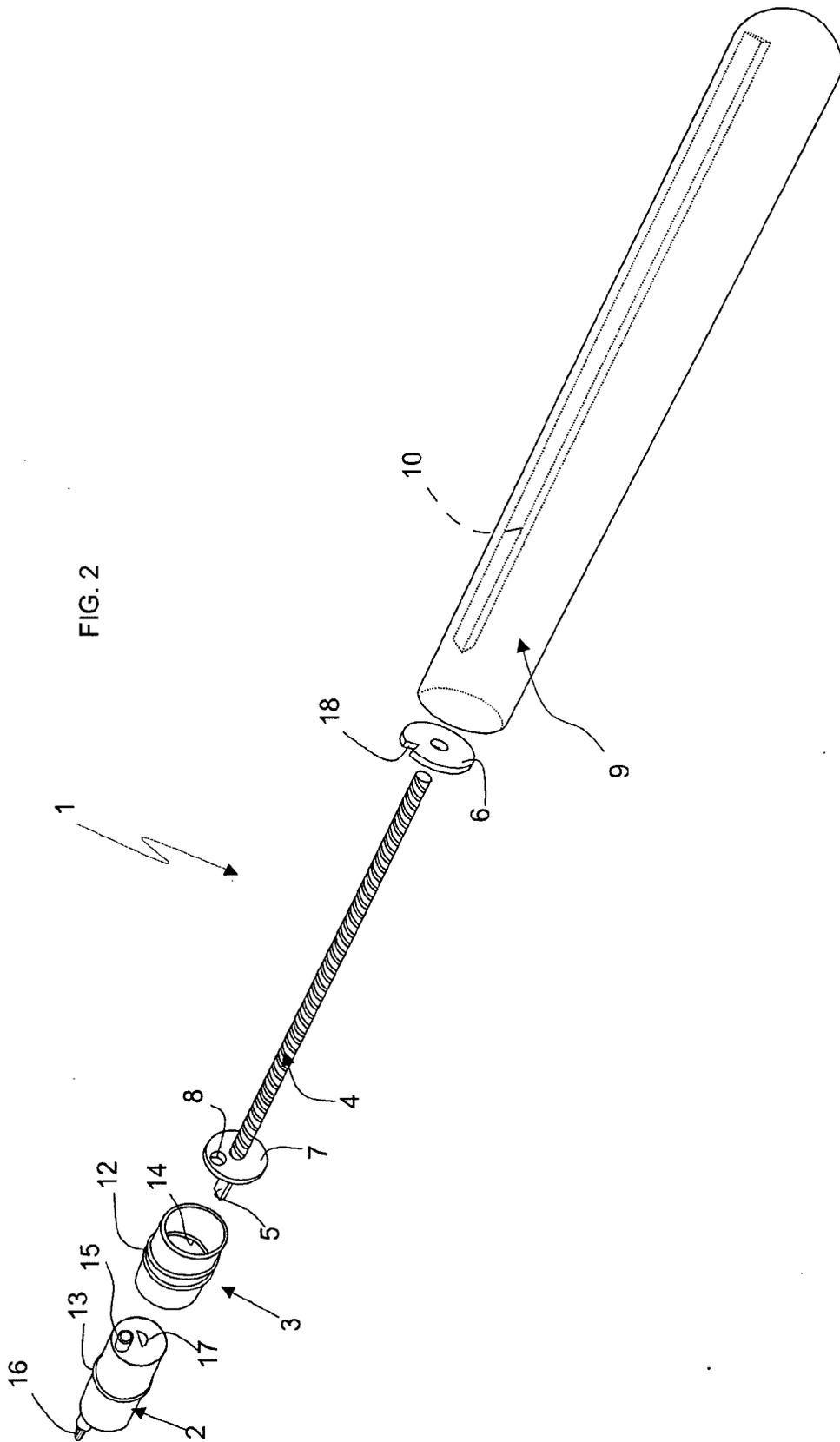
1. A metering brush (1), **characterized in that** it comprises compression means (6, 7) for pressing the product contained in a body (9), which acts as a container, said means (6, 7) being displaceable by rotation of the head (2) and/or the body (9); said head

(2) and body (9) being free to rotate about a common axis of rotation and being axially locked by a ring nut (3); due to said compression the product flows into the head (2) and bristles (16).

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2. A metering brush (1) as claimed in claim 1, **characterized in that** said means (6, 7) include disks inserted and fitted within the body (9); the disk (7) being fixed with respect to the body (9), and the disk (6) being freely displaceable due to the returning action induced by rotation of a rod (4) with a helical groove thereon, in combination with the action of an inner rail (10) in which a corresponding recess (18) in the disk (6) is engaged. 10
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3. A metering brush (1) as claimed in claim 1, **characterized in that** said ring nut (3) has an annular groove (14) formed in its inner wall which is designed to be locked against a corresponding annular protrusion (13) of the head (2) of the metering brush (1); said groove (14) and protrusion (13) both having an annular shape, and allowing the head (2) to be rotated relative to the ring nut (3), about their common axis. 20
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4. A metering brush (1) as claimed in claim 1, **characterized in that** the head (2), the ring nut (3) and the body (9) are coaxially interconnected.
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5. A metering brush as claimed in claim 1, **characterized in that**, at the end (5) of the rod (4) facing towards the head (2), an extruded part (5) is fitted in a corresponding cavity (17) of said head (2).
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6. A metering brush (1) as claimed in claim 5, **characterized in that** said extruded part (5) has a half-moon shape instead of any other shape, e.g. triangular or any other equivalent shape.
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7. A metering brush (1) as claimed in claim 1, **characterized in that** the head (2) comprises a conduit which is designed to be introduced in a hole (8) of the disk (7) thereby allowing the passage of the product from the body (9) to the bristles (16); said hole (8) being held closed by a thin membrane which is designed to be only broken by the above conduit (15) introduced therethrough upon first use. 45
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8. A metering brush (1) as claimed in claim 1, **characterized in that** it has a cap for closing and sealing the bristles (16).
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9. A metering brush (1) as claimed in claim 1, **characterized in that** the body (9), with its disks (6 and 7) and the rod (4) forms an interchangeable cartridge.

FIG. 1







DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 291 995 A (DIKOFF JOSEPH K) 29 September 1981 (1981-09-29) * column 2, line 5 - column 4, line 22; figures 1-3 *	1,4	INV. A46B11/00
A	* the whole document * -----	2,3,5-9	ADD. A45D40/04
			TECHNICAL FIELDS SEARCHED (IPC)
			A45D A46B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 27 June 2007	Examiner IONESCU, C
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 42 5084

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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27-06-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4291995	A	29-09-1981	NONE
