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(54) **ENAMEL APPLICATOR AND DOSER PLUG.**

(57) The plug is intended to be coupled to a container which holds an enamel for nails or the like. The application may be effected by actuating sideways a push-button (15) or by pressing axially an annular push-button (21). By acting on the push-button (15, 21), a cannula (9) is displaced axially and acts upon the plunger of the pumping device (4) which is part of or is mounted on the mouth of the container holding the enamel. When releasing the push-button, the product is ejected to the bristles (13) of a brush-type applicator which emerges from a trunco-conical nozzle (19) integral with the body. The trunco-conical nozzle (19) is sealingly closed by means of a threaded cap (20) and carries inside an obturating bell which is adapted to the conical periphery of the nozzle and which is spring-biased (30).

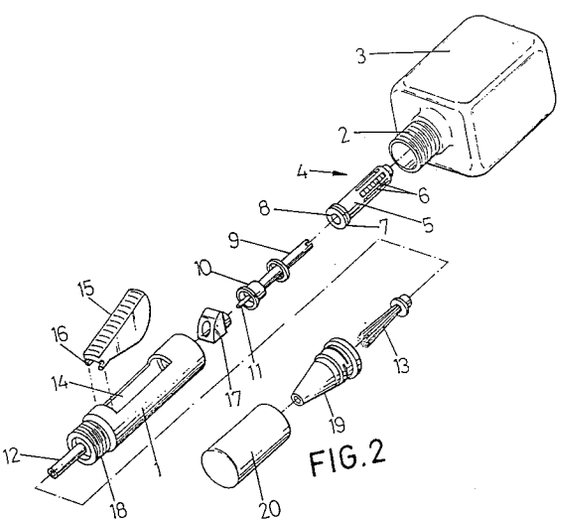

FIG.2

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THE OBJECT OF THE INVENTION

The present invetion, as it is indicated in the title of the this description, relates to an enamel applicator and doser plug which is intented to be coupled to a container which holds enamel for nails or the like being said plug in turn provided with a cap which sealingly closes in order to impede that the bristles of a product applicator brush located inside the same be taken out.

The application of the enamel is carried out by means of a pumping element which is activated from outside by means of a push-button.

The application of the product by the user is thus very easy, since it is sufficient to take off the cap and utilize the painting brush after pumping a dose of enamel, the housing being used as a grip.

BACKGROUNDS OF THE INVENTION

In order to paint the nails a conventional container is used the cap of which includes the applicator brush which is inserted in the bulk of the enamel.

The same applicant of the present invention has also registered the patent of invention number P-9100612 related to an applicator device of enamel for nails in which the existence of a container reservoir of enamel is contemplated as well as a sophisticated device coupled to the neck and covered by means of an obturating housing by a lid inside of which there was a brush for automatic application of enamel when a dose of product contained in the housing would reach the bristles thereof, said application being carried out during the movement of finger which is introduced through the opening of the housing, obtaining as much as two layers of enamel during the painting of nail both when introducing and when taking out the finger.

DESCRIPTION OF THE INVENTION

In general terms, the enamel applicator and doser plug, which constitutes the object of the invention, is fastened to the mouth of the enamel container either by means of threading, or by means of a simple press-fit action, permitting also the axial relative displacement between the two bodies, and existing means which impede the accidental separation of the assembly.

The pumping element is determined by a cylindrical sleeve having a smooth initial portion and another posterior portion affected by a plurality of slots or windows which permit the entrance of the product contained inside the case or container. A piston is aided by a rear spring, in such a manner that by being forced to displacement against the action of the spring, by means of a canula, going out of the smooth portion of the sleeve and being placed in the slot carrying part, when returing to the initial position a dose is taken through the axial orifice of the canula.

The pumping element and the mouth of the container are located inside a casing or housing of the doser plug, the free end of which having an external threading for connection to a trunco-conical nozzle from which the applicator brush of the product is emerged, having its bristels soaked in enamel, by acting upon the push-button.

The product applicator brush is in turn covered by the plug itself, or the cap, screwed over the nozzle, thus avoiding the drying of the product which has soaked the bristles of the applicator brush.

An obturating element is provided in order to aid the function of sealingly closing the applicator brush, said element being located inside the cap and can be axially displaced due to the assistance of an intermediate spring. Said spring makes the obturator displace towards outside, the exit of which being limited by a cap in such a manner that the mouth of the same is applied against the conical surface of the nozzle.

On the other hand, the applicator brush is connected to the end of a canula through which, by the movement of the push-button, the product to be applied flows.

In order to facilitate the understanding of the characteristics of the invention and forming an integral part of this description, sheets of drawings are attached in the figures of which, with illustrative and not limitative character the following is represented:

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1.- Is a perspective view of the enamel applicator and doser plug, without the protecting cap of the applicator brush and connected to a container of parallelepiped form. The dose of the product contained in the container is ejected by acting upon a side push-button in this first form of embodiment.

Figure 2.- Is a perspective and exploded view of the illustration of figure 1, including the obturating cap of the enamel applicator brush.

Figure 3.- Is a front view of an enamel applicator and doser plug in a second form of embodiment, closing the mouth of a container of the product, the pushing element for the action of the pumping device being of annular form wrapping around the casing, being able to be axially displaced with respect to the same, or to be an extension of the same, being simultaneously displaced with the nozzle and the cap.

Figure 4.- Is a front exploded view of an enamel applicator and doser plug, in a third form of embodiment in which the container casing is cylindrical with large length in order to absorb in the interior of the same the complete body of the container of enamel, the latter being cylindrical as well having a slightly smaller diameter.

DESCRIPTION OF A PREFERED FORM OF EMBODIMENT

Referring to the numerals adapted in the figures, it can be observed that the enamel applicator and doser plug, proposed by the invention, is constituted in a first form of embodiment as indicated in figures 1 and 2, by a cylindrical casing 1 which is connected to the threaded neck 2 of the enamel container 3. The pumping device 4 is fastened to the neck 2 of the container in such a manner that its body is immersed in the bulk of the product. It is determined by a sleeve 5 initially smooth and in the remaining part covered by a plurality of axial slots 6, in the interior of which is piston can be displaced (not shwon in the figures) aided by a spring which maintains the spring pushed towards the enlarged top 7 of the sleeve 5.

Through the axial orifice 8 of the pumping element 4, canula 9 is partially inserted which restson the piston. The other end of the canula 9 is formed as a housing 10 from which a small rigid conduit 11 is axially emerged which is in turn telescopically inserted in the prolonging tube 12 which emerges from the other end of the casing and is connected to the base of the bristles 13 of the applicator brush of the product.

The casing 1 is laterally provided with a window 14 through which the push-button 15 for activating the pumping device 4 goes out. The push-button 15 has a "U" shaped cross-section and the sides thereof corresponding to the branches are of generally triangular shape having a very acute vertex which presents a pair of arc-shaped pin 16 which define the means for rotation and connection to an interior axis of the casing not shown in the figures. The end opposite to said vertex are arc-shaped in order to define a cam curve which during its angular movement displaces the canula 9 by intermediate use of the pushing piece 17, the pushing being favoured due to a front surface of the pushing piece of a convexly curved shape and where a passage orifice of the tube 12 is presented as it can be observed in figure 2.

The free end of the casing 1 is provided with an exterior threading for the connection of the conical nozzle 19 thruogh the axial orifice of which the bristles 13 of the product applicatior brush are emerged as shown in figure 1.

The conical nozzle 19, as well ass the bristles 13 that emerge therefrom are totally closed by a cap 20. This cap 20 has an interior threading in order to connect with the threadsof the truncoconical nozzle 19 and inside of the same there is also another obturating cap aided by a spring which shall be observed hereinbelow in relation to figure 4.

With this disposition, by pressing with finger over the lateral push-button 15, the pushing piece 17 displaces the canula 9 and thus the pumping device 4 is loaded with a dose of the product to be ejected, so that when the action over the said push-button 15 is ceased, the piston of the pumping device pushes the product through the canula 9, the rigid conduit 11 and tube 12 in order to soak the bristles 13 so that the user can distribute the enamel on the nails.

Referring now specially to figure 3, an example of embodiment can be observed in which the activating push-button of the pumping device 4 has annular shape and is marked with numeral 21. The annular push-button 21, by being displaced in the direction shown by the arrow can axially displace the canula 9 so that after said displacement and as a consequence of the existence of the spring which aids the piston of the pumping device 4, the dose of product is ejected to the bristles 13. In this case, the nozzle 19 and the cap 20 are not displaced since the displacement is done by the annular push-button 21.

It also can be assumed that the annular push-button 21 is attached to a casing of small length which is connected to the neck of a container 22 of an axially movable form, i.e. a relative axial displacement between said casing (and thus the annular push-button 21 attached thereto) and the container 22 can be permitted, with elements existing in order to avoid the accidental separation of said elements. By being threaded the cap 20 to the nozzle 19, the axial pressure in order to eject a dose of product to the bristles 13 can be exerted directly on the cap 20. By later unscrewing the cap 20, the bristles 13 are already soaked by the product and ready for carrying out their painting function.

In figure 4 an example of embodiment can be observed which is functionally identical to the one shown in figure 3, but as to its external form it is appreciably changed since a cylindrical container 23 having a small diameter is used which is practically introduced in a casing 24 of large length and a slightly larger diameter. The casing 24 includes, in the lower part, a bevelled portion 25 which allows the visibility of the lower part of the cylidrical container 23.

In figure 4 it can be observed from the broken lines that the container 23 is already carrying the

pumping device fixed to the mouth of the same, the whole assembly being inserted in the interior of the casing 24, and preventing its involuntary extraction due to the existence of conjugated ribs fitting to each other, such as those referenced with numeral 26 in said figure 4. In the position shown in figure 4 the container 23 occupies the lowermost position and the canula 9 can remain inserted in the pumping device making contact with the piston in the position of mounting the assembly. The nozzle 19 rests over the external shoulder 27 of the cylindrical casing 24 by screwing on to the neck 28. This position of the container 23 is maintained stable due the existence of the spring which helps the piston of the pumping device 4.

In this condition, by carrying out a relative axial displacement between the casing 24 and the container 23, which takes place against the action of the latter mentioned spring, the pumping device is reloaded and later the bristles 13 of the brush are soaked when the original position is reached. The said axial displacement is made possible because of the existence of the bevelled portion 25 of the casing 24 since by holding the casing 24 by one hand, the end of the container 23 can be activated by thumb. Also with said bevelled portion 25 the involuntary exit of the product can be avoided when the whole assembly is stored, since the free edge of said casing 24 is practically levelled with the bottom of the container, said casing resisting against compression overforcings exerted thereon. In said figure 4 and more particularly in the cross-sectioned details which the cap 20 presents the inside of the same can be seen and its structure can be commented as indicated hereinabove. Inside ofthe same the obturator 29 is located in a displaceable manner aided by the spring 30 which maintains it pushed towards the emergency position coinciding with the illustration of figure 4. When it is intended to screw the cap 20 on the nozzle 19, the adjustment of the mouth of the obturator 29 on the trunco-conical portion, and also overpassing the latter, of the nozzle 19 is initially carried out, advancing thereafter only the cap 20 during the rotating, thus the pressure of the spring 30 maintains sealingly closed the chamber occupied by bristles 13. By unwinding the cap 20, it bounces loose due to the action of the spring 30 and then it is necessary to exert a slight axial force in order to separate the assembly.

Claims

1. Enamel applicator and doser plug, which coupled to a container which holds enamel for nail or the like, is characterised in that it comprises a cylindrical casing (1, 24) with a push-button (15, 21) for actuating a pumping device (4) with which a canula (9) is axially displaced which pushes a piston guided through a sleeve (5) being initially smooth and having a remaining portion provided with a plurality of axial slots (6) for the entrance of the product, being said piston aided by an opposing spring; the free end of the casing (1, 24) being intended to be connected to a nozzle (19) through the axial orifice of which emerges an applicator brush (13) the bundle of hair or bristles of which is fixed to the mouth of the canula (9), or to a prolongation (11, 12) of the same with the particualrity that the nozzle (19) remains sealingly closed by a threaded cap (20), provided in turn with an obturator (29) being displaceable in the interior of the same and aided by a spring (30) which maintains its mouth fixed against the conical surface of the nozzle (19).

2. Enamel applicator and doser plug, according to claim 1, in which the push-button (15) for actuating the pumping device (4) emerges through a window (14) of the casing (1) and has a "U" shaped cross-section the side of which corresponding to the branches are generally triangular having a very acute vertex where means (16) are presented for rotation and connection to a transversal and interior axis of thecasing (1), the sides opposite to said vertex being arc-shaped in order to define a cam curve which displaces a pushing piece (17) of the canula (9), having said pushing piece (17) a front convexly curved surface where a passage orifice of the telescopically prolongation (12) of the canula (9) is provided.

3. Enamel applicator and doser plug, according to claim 1, in which the activating push-button (21) is annular and wrapps around the casing, carrying along the canula (9) in its displacement in order to eject, when released, a dose of product which has soaked the bristles (13) of the applicator brush.

4. Enamel applicator and doser plug, according to claim 1, in which the activating push-button is constituted by the casing itself, the enamel container (22) being retained at the mouth thereof in an axially moveable form and being aided by the spring of the pumping device (4), thus allowing the penetration of the canula (9) in the interior of the pumping device (4) when a relative axial approach between the two bodies (21 and 22) is carried out.

5. Enamel applicator and doser plug, according to claim 4, in which the casing (24) has a

length which permits fit in the interior thereof a whole body of the enamel container (23), the latter being cylindrical and having a slightly smaller diameter, the former having a wide bevelled portion (25) at the free end thereof where a portion of the container (23) remains visible.

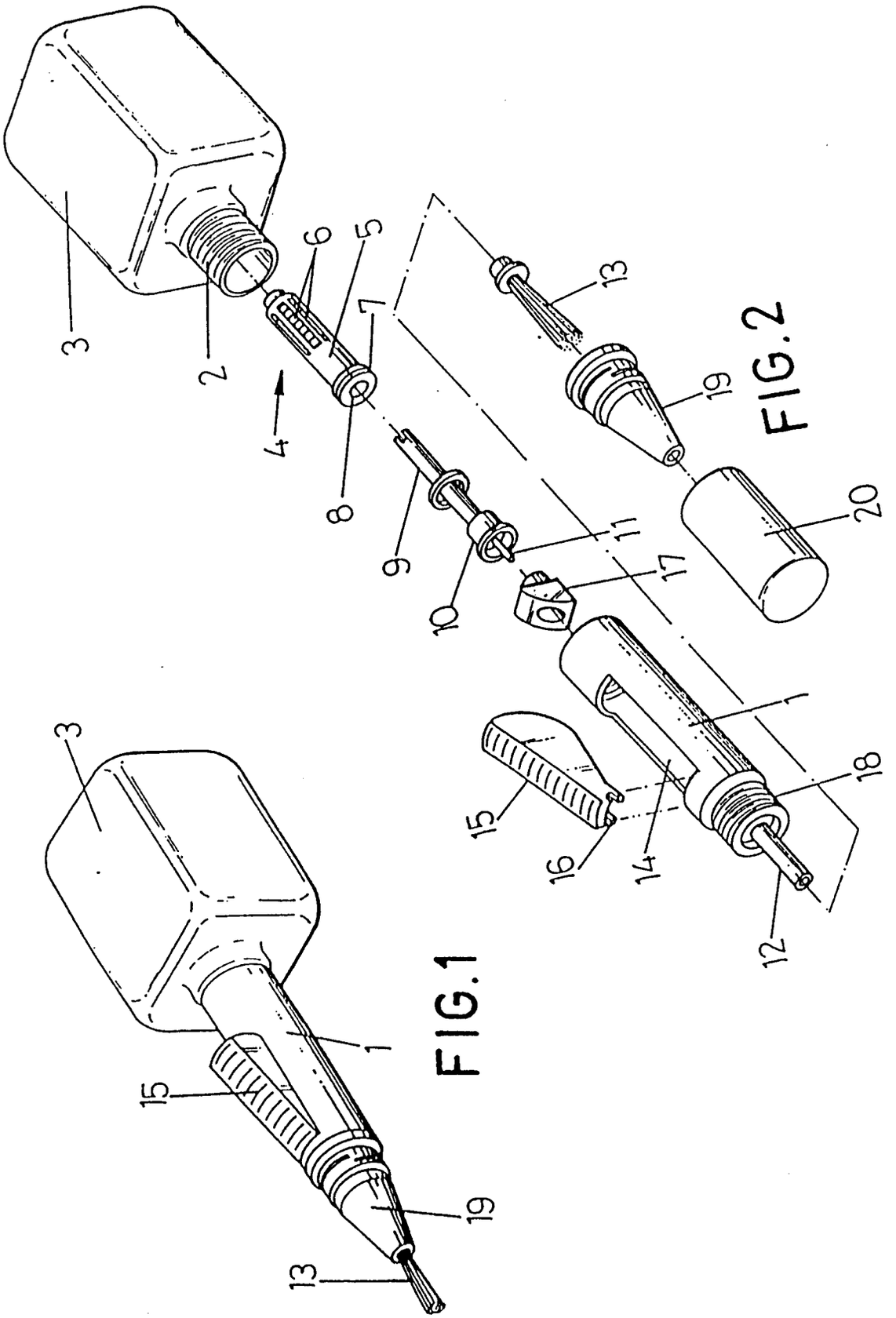

FIG.2

FIG.1

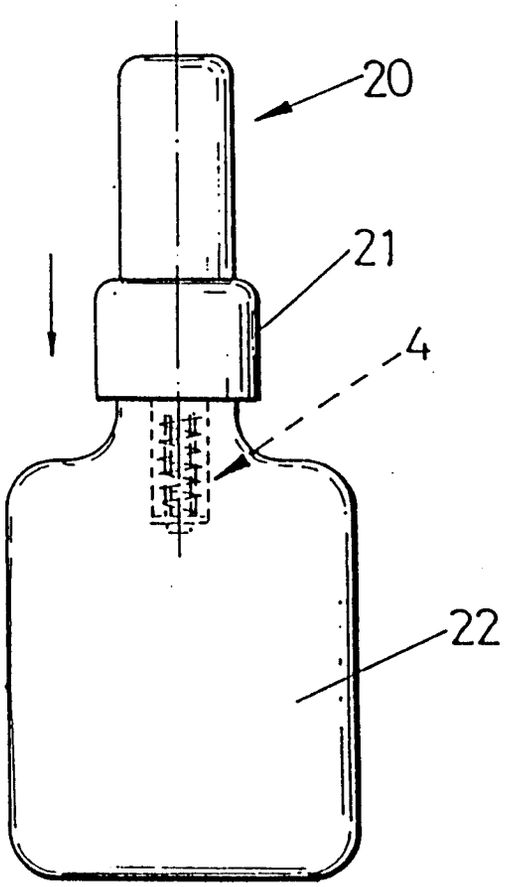

FIG.3

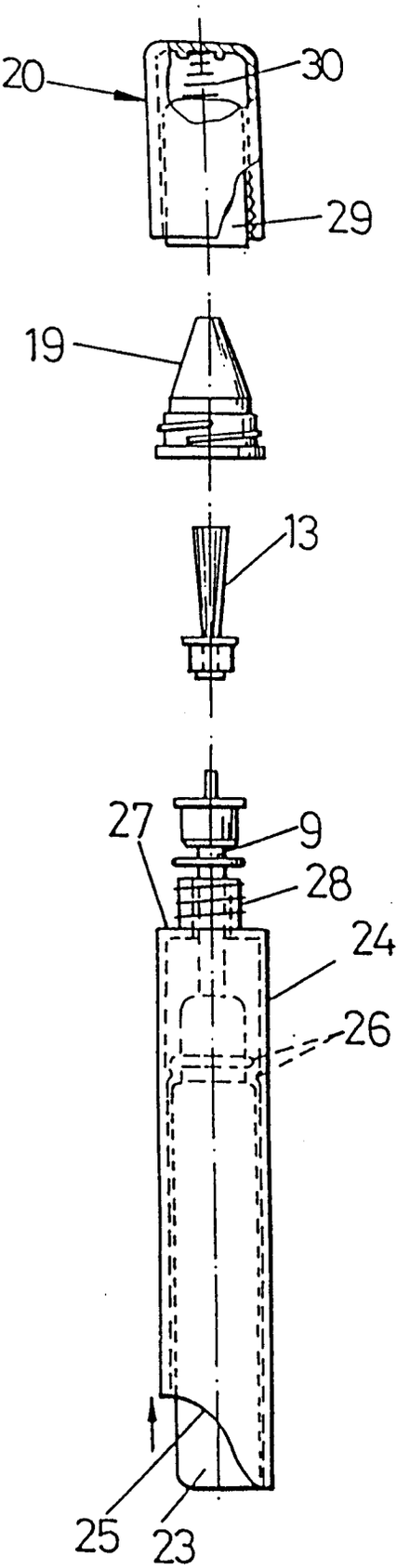

FIG.4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES 93/00047

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl. 5 A45D34/04; B05C17/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl. 5 A45D ; B05C ; B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE,A,3 736 095 (SCHWAN-STABILO) 3 May 1989 see the whole document	1
A	DE,C,3 641 389 (SCHWAN-STABILO) 28 January 1988 see the whole document	1
A	FR,A,2 577 474 (MITSUBISHI PENCIL) 22 August 1986 see page 7, line 19 - page 8, line 17; figures 2,8	1
A	GB,A,234 355 (FREDERICK ABSALOM EBERLIN) 18 June 1925 see the whole document	1

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
5 October 1993 (05.10.93)	8 October 1993 (08.10.93)
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