



(11)

EP 2 529 643 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
30.11.2016 Bulletin 2016/48

(51) Int Cl.:
A46B 11/00 (2006.01)

(21) Application number: **12182542.6**

(22) Date of filing: **24.08.2006**

(54) **Oral care instrument including an oral care agent and a wear indicator**

Mundpflegeinstrument mit einem Mundpflegemittel und einem Verschleissanzeiger

Instrument de soin buccal comprenant un agent de soin buccal et un indicateur d'usure

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**

(30) Priority: **26.08.2005 US 711557 P**

(43) Date of publication of application:
05.12.2012 Bulletin 2012/49

(62) Document number(s) of the earlier application(s) in
accordance with Art. 76 EPC:
06789969.0 / 1 924 169

(73) Proprietor: **Colgate-Palmolive Company**
New York, NY 10022 (US)

(72) Inventors:
• **Russell, Bruce, M.**
Howell, NJ New Jersey 07731 (US)
• **Canady, Van**
Princeton, NJ New Jersey 08540 (US)

- **Sorrel, Steven, M.**
Millwood, NY New York 10546 (US)
- **Rancel, Candi**
Stamford, CT Connecticut 06905 (US)
- **Cai, Heng**
Yardley, PA Pennsylvania 19067 (US)
- **Hohlbein, Douglas, J.**
Hoopwell, NJ 08525 (US)
- **Jimenez, Eduardo, J.**
Manalapan, NJ New Jersey 07726 (US)

(74) Representative: **Schicker, Silvia et al**
Wuesthoff & Wuesthoff
Patentanwlte PartG mbB
Schweigerstrae 2
81541 Mnchen (DE)

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EP 2 529 643 B1

Description

FIELD OF THE INVENTION

[0001] The present invention relates to an oral care instrument with at least one oral care agent that can be delivered within the mouth of a user to provide the user with enhanced oral health. The present invention also pertains to such an oral care instrument including a wear indicator that informs the user when the oral care agent has been depleted.

BACKGROUND OF THE INVENTION

[0002] People exhibit many forms of poor oral health including tooth decay, periodontal diseases and bad breath (halitosis). Tooth decay and periodontal disease are typically caused by harmful bacteria within the mouth. When the harmful bacteria mixes with proteins present in saliva, a film of plaque is formed on the teeth and soft tissue. If the plaque is not removed, it can attack the teeth and create cavities. Additionally, the plaque will attack the soft tissue within the mouth and cause gum disease, the leading cause of tooth loss in adults. As a result, decreasing the amount of harmful bacteria in the mouth has long been the target of persons working in the oral health care field.

[0003] The most common way of minimizing the harmful bacteria within the mouth is brushing with a dentifrice that delivers at least one oral care agent into the mouth. Orally introduced liquids, including oral rinses, are also utilized to provide additional oral care beyond that achieved while brushing. Mouthwashes may also be used to deliver breath freshening agents within the mouth in an attempt to eliminate bad breath.

[0004] Unfortunately, people do not always have the time to provide themselves with adequate oral care. For example, a busy person may not have the time or patience to brush thoroughly, floss and/or use an oral rinse. Alternatively, certain people may consider anything more than brushing their teeth to be unnecessary. For either reason, these people may leave a significant amount of harmful bacteria within their mouths after completing their oral care routines, which can begin to attach the teeth and gums.

[0005] Additionally, even when all available and recommended products are used, they may not be as effective as they could be if delivered simultaneously. For example, using a dentifrice and an oral rinse at different times may diminish any synergistic effect that they could provide to the user when used simultaneously.

[0006] US 5,340,581 describes an oral brush including a sustained-release template comprising a water-soluble support resin, a water soluble polymer that dissolves from the template when the template is exposed to water, and an antimicrobial agent.

BRIEF SUMMARY OF THE INVENTION

[0007] The present invention provides an oral care instrument according to claim 1. Optional features are recited in the dependent claims.

BRIEF DESCRIPTION OF THE FIGURES

[0008]

Figure 1 is an isometric view of an oral care instrument according to aspects of the present invention;

Figure 2 is a view of one surface of the instrument of Figure 1;

Figure 3 illustrates a surface of the instrument of Figure 1 taken opposite Figure 2;

Figure 4 is an enlarged portion 4-4 of the surface of the instrument of Figures 1-3;

Figure 5 is a cross section of one embodiment of a cavity shown in Figure 4;

Figure 6 is a cross section of one embodiment of a cavity shown in Figure 4;

Figure 7 is a partial cross section of the instrument of Figure 2;

Figure 8 is a partial cross section of an instrument according to an alternative embodiment of the present invention;

Figure 9 illustrates an embodiment of the instrument of Figure 2; and

Figure 10 is a perspective view of an alternative embodiment of an instrument according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0009] Figure 1 illustrates one embodiment of an oral care instrument 1 having an elongated handle 10 and a head 20 intended to be introduced into the mouth or oral cavity of a user. The oral care instrument 1 is not limited to a toothbrush as shown and described, but can have any shape or structure and perform any function that permits it to deliver oral care agents to the user, with non-limiting examples of other oral care instruments including tongue cleaners and portable brush, toothpick combinations. The instrument 1 can be used once and then discarded, or it can be used repeatedly over a period of time. The elongated handle 10 may be formed of many different shapes and with a variety of constructions that permit the oral care instrument 1 to be readily gripped and ma-

nipulated within the mouth of the user.

[0010] The head 20 includes multiple surfaces that are exposed to fluids within the mouth during use. In the embodiment illustrated in Figures 1-3, the head 20 includes a first surface 22 on a first side 23 and a second surface 24 on a second, opposite side 25. Sidewalls 26 extend between the surfaces 22, 24. Oral care elements 30 can extend from either or both surfaces 22, 24 of the head 20, which elements 30 can include teeth cleaning elements 35, such as elongated bristles or elastomeric fingers, or soft tissue cleaning elements such as tongue cleaning members (not shown) extending from either surface 22, 24. A third example includes a head 20 having teeth cleaning elements 35 extending from the first surface 22 and tongue cleaning elements (not shown) extending from the second surface 24.

[0011] The oral care elements 30 disclosed herein are not limited to those discussed above. Instead, the term "oral care element" is generic and intended to include all types of elements that can be used within a mouth including different tooth and soft tissue cleaning members that are not mentioned above, gum massaging members and other forms of oral cleaning or massaging members.

[0012] Regardless of the number or position of the oral care elements 30 provided on the head 20, the head 20 also includes at least one oral care agent for introducing into the mouth to perform an intended function. In an embodiment, the oral care agent(s) can be provided in cavities 50 (See Figure 4) formed or present in the head 20. The oral care agent(s) also are included in or on a separate member 100 positioned on one or more of the surfaces 22, 24 or 26 of the head 20 (See Figure 2). This member 100 may be provided in place of, or in addition to, the cavities 50 within the head 20.

[0013] The head 20 is generally formed of a material having a plurality of the externally exposed cavities 50 that are open to their respective outer surface 22, 24, 26. The entire head 20 can be formed of this material or the material can be applied over an inner core (not shown). The material used to form the head 20 can include any one of a wide variety of commercially available polymers, such as a thermoplastic polymer for example. In an embodiment, the oral care instrument 1 is formed from a polypropylene, such that upon manufacture it is formed with internally extending cavities. Different thermoplastic polymers or polymers having different molecular weights typically have different melting and solidifying characteristics. Therefore, it is within the purview of a skilled artisan to select a polymer suitable for a given application. The oral care instrument 1 can be formed of polypropylene materials such as those available from M.A. Industries. In an embodiment, the head 20 formed of a polypropylene material is manufactured using a sintering process. The head 20 can be formed at the same time as the remaining portions of the oral care instrument 1 as a single, continuous member. Alternatively, the head 20 can be manufactured as a component that is assembled as part of the instrument 1. The head 20 can then be attached through

a number of techniques including welding via ultrasonics, heat staking, laser, etc. or through mechanical methods that also permit the head 20 to be removed and discarded.

[0014] As used herein, the term "cavity" is intended to refer to an opening in the head 20, whether present in the head material itself or intentionally formed therein, that preferably does not extend all the way through the head. As used herein, the term "exposed surface" relates to a surface that defines the shape of the head 20 and which generally defines the boundary between the head 20 and its environment. The externally exposed cavities 50 are capable of receiving and retaining one or more of the dispensable oral care agents. The cavities 50 can receive these agents in a powered form, a liquid form or both. In an embodiment, the cavities 50 will receive and retain the oral care agent(s) until a predetermined amount has been received or the cavity is filled. The size and shape of these cavities 50 may be varied so they can include greater amounts of an oral care agent or an oral care agent with larger or different shaped molecules.

[0015] It is understood that a wide variety of material specifications (such as polymer type, polymer size, granule size distribution, the type of oral care agent used, oral care agent particle size distribution and ratio of porous polymer to oral care agent) and also a wide variety of manufacturing/processing parameters (such as temperature and pressure) may be used to provide an instrument 1 having various advantageous characteristics including cavity sizing, shape and spacing. For example, the oral care instrument 1 can have cavities 50 that deliver oral care agent(s) into the mouth of a user at different rates. These rates can be controlled, for example, by the size of the exposed surface area of the respective cavity 50 and contained oral care agent in the outer surface 22, 24, 26 of the head, the shape of the cavities 50, the depth of the cavities 50 and/or the characteristics of the contained oral care agent(s).

[0016] Adjacent cavities 50 can have different sizes in order to accommodate different amounts of oral care agent(s) or different molecular sized oral care agent(s). As a result, the oral care instrument 1 can have different oral care agent release characteristics that control when and how much of each oral care agent is delivered into the oral cavity. For example, in an embodiment in which it is desired that the oral care agent(s) be released relatively quickly from the oral care instrument 1, a larger thermoplastic granule size for the head 20 may preferably be selected and, where it is desired that the oral care agent(s) be dispensed more slowly, a smaller thermoplastic granule size may preferably be selected.

[0017] Adjacent cavities 50 within the outer surfaces of the head 20 can carry the same or different oral care agents. Similarly, the same void 50 can carry different oral care agents (A, B), either layered on top of each other (Figure 5) for controlled release timing or adjacent to each other (Figure 6) so they will react simultaneously when they come into contact with an activator.

[0018] The active oral care agents can function as, for example, abrasives, mouth fresheners, tooth whiteners, vitamins, anti-bacterial/anti-microbial agents, plaque dispersants, de-sensitizing agents for the mouth and teeth, anti-cavity agents, and/or combinations of these functional agents to provide individual or combined, synergistic benefits. Oral care agents can also include flavorings, decorations, nutritional and body supplements such as calcium. The calcium could, for example, be provided in 1 mg single use dosages. The flavorings could be released to indicate that the oral care element 1 is functioning properly or to indicate that the instrument 1 is exhausted and ready to be disposed or recharged. Also, the oral care agents could eliminate particular enzymes from within the mouth of the user. The decorations applied by the oral care agents could temporarily add coloring, sparkle, glitter and/or indicia to the teeth of the user. Further, the lack of fluid within the mouth could trigger an oral care agent, such as stimulant for the salivary gland, provided within the cavities 50. The amount and rate of delivery for these agents will depend on the amount needed and the agent being applied.

[0019] During the production of the oral care instrument 1, the oral care agents can be delivered to the cavities in a solid and/or liquid compound. In one embodiment, the material of the oral care instrument 1 is immersed in a desired liquid so that the oral care agent(s) within the liquid can flow and remain within the cavities 50. As it dries, the oral care agent 20 becomes secure within the cavities 50. It is also possible to impregnate the cavities 50 of the portion of the head 20 with desired oral care agent(s) during production. It is also understood that a spent oral care instrument, i.e., one in which the oral care agent(s) has been depleted, may advantageously be recharged with an oral care agent by immersing it again in a liquid that carries the desired oral care agent(s). The cavities 50 can be replenished (recharged) on a regular basis, including daily for those instruments providing single dosages of at least one oral care agent.

[0020] Once the cavities 50 receive their intended oral care agent(s), the head 20 may be advantageously used to dispense or release the oral care agent(s) within the mouth. The oral care agents will typically leach from their respective cavities 50 when they come into contact with fluids and/or chemicals within the mouth. According to an aspect of the present invention, active oral care agents that have been impregnated in the head material, for example, can be released into the mouth while brushing one's teeth. During the tooth brushing process water and chemicals present in the mouth of a user will come into contact with the oral care agent(s) within the cavities 50 in the head 20. This will create a reaction in which the impregnated oral care agent(s) will leach out from the cavities 50 within the head 20. Additionally, the use of different oral care agents in cavities 50 of the same head 20 has the capability of providing a synergistic benefit to the user. This can be especially useful when there are two beneficial oral care agent(s) which, in ideal circum-

stances, should be kept separated from each other until the desired time of use. In this manner the oral care instrument 1 can deliver multiple benefits to the user at one time.

[0021] The oral care instrument 1 is also able to deliver the benefits of a dentifrice by impregnating the head material with the chemicals and abrasives found in toothpaste, for example. In such an embodiment, it would be possible to deliver some of the chemical and mechanical benefits of toothpaste solely through use of the toothbrush without toothpaste being applied to the cleaning elements of the toothbrush. At least one of the dispensed oral care agents could also operate as a catalyst or enhancer for the toothpaste or other agents introduced into the mouth. Also, with this oral care instrument 1, it may be possible to deliver the benefits of a chemical, such as chlorhexidine for example, in a more efficacious manner.

[0022] The delivery member 100 discussed above provides or includes the oral care agents discussed above and also functions as a wear indicator. The member 100 can be located at any position on the head 20 and can provide notice to the user when the oral care agent is depleted. In a non-limiting illustrative embodiment, the delivery member 100 is shown as a strip 102 on the second surface 24. The delivery member 100 can have any shape and be located on or in any surface(s) on the instrument 1 that can be viewed by the user. In addition to identifying when the instrument 1 needs to be discarded or recharged, the delivery member 100 also includes and delivers at least one of the above-discussed oral care agents within the oral cavity.

[0023] The delivery member 100 is removable and one or more replacement strips 102 can be applied in its place, in series or in parallel, to perform the same function(s) as the delivery member 100. These replacement strips 102 can be applied after each use of the instrument 1 or after repeated uses. Single or multiple strips can also be applied on a head surface to deliver multiple individual benefits or benefits that arise from the combined presence of multiple different strip actives. Such strips could be sold separately and applied by a user as desired. For the user's convenience, the replacement strips 102 could be carried within a recess or compartment in the handle 10 of the instrument 1.

[0024] Replacement/enhancement strips 102 that perform different functions within the mouth can also be provided. For example, the replacement/enhancement strips 102 can be designed to freshen breath, activate salivary glands, and/or desensitize teeth, etc. In such embodiments, these different functioning strips 102 can be applied to the instrument 1 in place of, or in addition to, the strips 102 that are regularly used on the head 20 to kill harmful bacteria within the mouth, for example.

[0025] As illustrated in the embodiment of Figure 7, the delivery member 100 (and replacement strips 102, see Figure 2) includes a first layer 110 preferably of a water insoluble material, such as a resin, that can hold the oral care agent(s) being delivered within the mouth. The water

insoluble material maintains the structure of the delivery member 100 as the oral care agent leaches out and is delivered to the oral cavity of the user. The layer 110 of material can include

a material layer designed to incorporate the desired criteria of release rate and dosage that is securable to the head 20. The delivery member 100 can be secured on or within at least one surface of the head 20. For example, the delivery member 100 could be secured within a groove 118 (Figure 8) that extends along or around the head 20. Such a groove 118 could be about 1 to about 2 mm deep, relative to the outer surfaces of the head 20.

[0026] A second layer 114 is positioned over the first layer 110. This layer may be made of any material or materials that may be chemically and/or mechanically altered. Chemical and/or mechanical alteration may be accomplished by, e.g., chemical reactions initiated by components of the saliva or water, including dissolution or enzyme conversion and/or abrasion of the layer against the surfaces of the oral cavity. This layer 114 can erode due to abrasion during use of the instrument 1 or it can be formed of a water-soluble material. In an embodiment, the outer layer 114 includes a water-soluble polymer (preferably polyethylene oxide, polyethylene glycol, or polyvinyl alcohol for example). However, any known, non-toxic polymer, copolymer or combinations of the same providing a controllable water solubility to the layer can be used. The solubility of the polymer used in the outer layer 114 should be low enough that it dissolves out slowly, over a period of many uses. The second layer 114 can also include one or more oral care agents, such as an anti-microbial agent. The anti-microbial agent can be any of those discussed above, such as chlorhexidine.

[0027] Non-limiting examples of anti-microbial agents that can be used in place of chlorhexidine digluconate include antibiotics such as actinobolin, chlortetracycline, tetracycline, streptomycin, kanamycin, neomycin, nidadamycin, bacitracin, erythromycin, penicillin, rancemycin, gramicidin, saramycin, and polymyxin B; as well as antiplaque enzymes such as mucinases, pancreatin, fungal enzymes, protease-amylase, dextranase, moimnase, zendium, amyloglucosidase, and glucose oxidase. Other conventional antimicrobials that can be used include phenolic compounds (e.g., phenol, thymol, 2-phenylphenol, hexylresorcinol), and listerine (thymol, eucalyptol, menthol, methylsalicylate); bipyridines (e.g., octenidine); pyrimidines (e.g., hexetidine); halogens (e.g., iodine, iodophores, fluorides); quaternary ammonium salts (e.g., cetylpyridinium chloride, benzethonium chloride, domiphen bromide); oxygenating agents (e.g., peroxides; perborate); herbal extracts (e.g., sangnimarine); heavy metal salts (e.g., silver, mercury, zinc, copper, tin); and other bis-biguanidines besides chlorhexidine (e.g., alexidine). Of course, other chlorhexidine salts like the diacetate and dihydrochloride can be used in place of chlorhexidine digluconate.

[0028] The two layers 110, 114 can be produced either by conventional co-extrusion or co-injection molding

techniques, from two different mixtures. Alternatively one layer can be extruded and then the other layer can be thermoformed/compression molded or laminated onto the extruded layer. Other methods of manufacture are also contemplated.

[0029] As the delivery member 100 comes into contact with water, saliva or a chemical in the mouth, the outer layer 114 dissolves and the oral care agent(s) leach out from the area exposed by the dissolved outer layer 114. As the outer layer 114 dissolves away with repeated use, it not only exposes the oral care agent held in the resin, for example, but it also exposes indicia 120 that indicates the wear of the instrument 1, including when the oral care agent(s) within the instrument is depleted and needs to be replaced or recharged (Figure 9). The indicia 120 can be a visible color that attracts the user's attention to the layer 110 and illustrates that the amount of effective life remaining in the instrument 1. Alternatively, the indicia 120 can be a message that tells the user when the oral care instrument 1 is depleted (Figure 9). Other manners of communication are also contemplated.

[0030] As illustrated in Figure 10, the instrument 1 can include any number of containers or capsules 200 secured to a surface of the head 20 or included within the head 20. Each capsule 200 can be formed of a biocompatible material and comprise at least one oral care agent, such as liquid and/or powder oral care agents. In certain instances, the agents provided in the capsules should not be mixed until within the mouth. These capsules 200 can burst under pressure or dissolve and release the oral care agent(s) into the oral cavity.

[0031] Furthermore, a single container or capsule 250 having two or more chambers 252, 254 is secured to a surface of the instrument 1. In such case, a membrane 255 extends between the chambers 252, 254. Over time, the membrane 255 will dissolve or break. This failure of the membrane can be time dependent and/or as a result of use of the instrument 1 within the mouth. When the membrane 255 dissolves, breaks or otherwise wears away from an inner wall of the capsule 250, the materials in the chambers 252, 254 contact each other and cause a perceptible change that indicates that the oral care agent in the instrument 1 may be depleted.

[0032] As described above, a wide variety of molding techniques may be used in accordance with the oral care instrument, and a wide variety of material specifications and parameters may be used to provide instruments having a variety of desired characteristics. While the shapes of various preferred inventive articles are described above, it is readily understood that a wide variety of alternate shapes and sizes are contemplated by the invention. Preferably, shapes and sizes are selected such that fluid contact with the porous portion of the oral care instrument is optimized. Further, those skilled in the art will appreciate that there are numerous variations and permutations of the above described systems and techniques. It is to be understood that other embodiments may be utilized and structural and functional modifica-

tions may be made without departing from the scope of the claims.

Claims

1. An oral care instrument (1) comprising:

at least one oral care agent;
a wear indicator; and
a head (20);

characterised in that the at least one oral care agent is provided in a removable member (100) secured to the head (20), which removable member (100) is configured to function as the wear indicator.

2. The oral care instrument (1) of claim 1, wherein the wear indicator visually communicates the existence of the at least one oral care agent.

3. The oral care instrument (1) of claim 1, wherein said wear indicator includes a first layer (114) and a second layer (110), the second layer (110) having a portion that becomes exposed, and wherein one of said layers comprises the at least one oral care agent.

4. The oral care instrument (1) of claim 3, wherein said second layer (110) includes a material having cavities that comprise said at least one oral care agent.

5. The oral care instrument (1) of claim 3, wherein said second layer (110) is removably secured to a portion of the head (20) of said oral care instrument (1); optionally wherein said second layer (110) is secured within a recessed portion (118) of said head (20).

6. The oral care instrument (1) of claim 1, wherein said wear indicator comprises a plurality of different materials that, when in contact, indicate that the at least one oral care agent is depleted; optionally further comprising a first layer that acts as a barrier between the plurality of different materials that wears away to allow the plurality of different materials to contact.

7. The oral care instrument (1) of claim 1, further comprising a rupturable element on at least one surface of the oral care instrument (1), said rupturable element comprising at least one oral care agent.

8. The oral care instrument (1) of claim 1, wherein the head (20) has a plurality of externally open cavities (50) that comprise at least one oral care agent.

9. The oral care instrument (1) of claim 8, wherein a first of said cavities (50) comprises a first oral care agent and a second of said cavities (50) comprises

a second oral care agent, said first oral care agent being different from said second oral care agent; optionally wherein said first oral care agent is dispensed at a first rate and said second oral care agent is dispensed at a second rate that is different from said first rate.

10. The oral care instrument (1) of claim 8, wherein at least one of said cavities (50) comprises a first oral care agent arranged relative to a second oral care agent such that said first oral care agent is proximate an outer surface of said head (20) relative to said second oral care agent;

or wherein at least one of said cavities (50) comprises a first oral care agent and a second oral care agent such that both said first and second oral care agents are substantially simultaneously exposed to an outer surface of said head (20).

11. The oral care instrument (1) of claim 1, wherein the head (20) has a plurality of cavities (50), and wherein said cavities (50) include additional oral care agents that are dispensed at different rates.

12. The oral care instrument (1) of claim 1, wherein said wear indicator comprises a first layer (110) and a second layer (114) that is chemically or mechanically altered to expose said first layer (110).

13. The oral care instrument (1) of claim 12, wherein said first layer (110) indicates when the oral care instrument (1) should be discarded or recharged with additional oral care agents; or wherein at least one of said layers (110, 114) includes an oral care agent; or wherein said first layer (110) is secured to the head (20).

Patentansprüche

1. Mundpflegeinstrument (1), umfassend:

mindestens ein Mundpflegemittel;
eine Verbrauchsanzeige; und
einen Kopf (20);

dadurch gekennzeichnet, dass das mindestens eine Mundpflegemittel in einem abnehmbaren Element (100) bereitgestellt ist, das an dem Kopf (20) befestigt ist, wobei das abnehmbare Element (100) dazu eingerichtet ist, als die Verbrauchsanzeige zu wirken.

2. Mundpflegeinstrument (1) nach Anspruch 1, wobei die Verbrauchsanzeige visuell die Existenz des mindestens einen Mundpflegemittels vermittelt.

3. Mundpflegeinstrument (1) nach Anspruch 1, wobei

- die Verbrauchsanzeige eine erste Schicht (114) und eine zweite Schicht (110) umfasst, wobei die zweite Schicht (110) einen Abschnitt aufweist, der freigelegt wird, und wobei eine der Schichten das mindestens eine Mundpflegemittel umfasst.
4. Mundpflegeinstrument (1) nach Anspruch 3, wobei die zweite Schicht (110) ein Material umfasst, das Hohlräume aufweist, die das mindestens eine Mundpflegemittel umfassen.
5. Mundpflegeinstrument (1) nach Anspruch 3, wobei die zweite Schicht (110) lösbar an einem Abschnitt des Kopfes (20) des Mundpflegeinstruments (1) befestigt ist; wobei optional die zweite Schicht (110) im Inneren eines vertieften Abschnitts (118) des Kopfes (20) befestigt ist.
6. Mundpflegeinstrument (1) nach Anspruch 1, wobei die Verbrauchsanzeige eine Mehrzahl verschiedener Materialien umfasst, die bei Berührung anzeigen, dass das mindestens eine Mundpflegemittel verbraucht ist, und das optional ferner eine erste Schicht umfasst, die als Barriere zwischen der Mehrzahl von verschiedenen Materialien wirkt und die verbraucht wird, um zu ermöglichen, dass die verschiedenen Materialien in Kontakt geraten.
7. Mundpflegeinstrument (1) nach Anspruch 1, das ferner ein abreißbares Element auf mindestens einer Oberfläche des Mundpflegeinstruments (1) umfasst, wobei das abreißbare Element mindestens ein Mundpflegemittel umfasst.
8. Mundpflegeinstrument (1) nach Anspruch 1, wobei der Kopf (20) eine Mehrzahl nach außen offener Hohlräume (50) aufweist, die mindestens ein Mundpflegemittel umfassen.
9. Mundpflegeinstrument (1) nach Anspruch 8, wobei ein erster der Hohlräume (50) ein erstes Mundpflegemittel umfasst und ein zweiter der Hohlräume (50) ein zweites Mundpflegemittel umfasst, wobei sich das erste Mundpflegemittel von dem zweiten Mundpflegemittel unterscheidet; wobei optional das erste Mundpflegemittel mit einer ersten Geschwindigkeit abgegeben wird und das zweite Mundpflegemittel mit einer zweiten, von der ersten Geschwindigkeit verschiedenen Geschwindigkeit abgegeben wird.
10. Mundpflegeinstrument (1) nach Anspruch 8, wobei mindestens einer der Hohlräume ein erstes Mundpflegemittel umfasst, das derart relativ zu einem zweiten Mundpflegemittel angeordnet ist, dass das erste Mundpflegemittel relativ zu dem zweiten Mundpflegemittel nahe an einer äußeren Oberfläche des Kopfes (20) angeordnet ist; oder wobei mindestens einer der Hohlräume (50) ein erstes und ein zweites Mundpflegemittel umfasst, so dass sowohl das erste als auch das zweite Mundpflegemittel im Wesentlichen gleichzeitig an einer äußeren Oberfläche des Kopfes (20) freigelegt werden.
11. Mundpflegeinstrument (1) nach Anspruch 1, wobei der Kopf (20) eine Mehrzahl von Hohlräumen (50) aufweist, und wobei die Hohlräume (50) zusätzliche Mundpflegemittel enthalten, die mit verschiedenen Geschwindigkeiten abgegeben werden.
12. Mundpflegeinstrument (1) nach Anspruch 1, wobei die Verbrauchsanzeige eine erste Schicht (110) und eine zweite Schicht (114) umfasst, die chemisch oder mechanisch verändert wird, um die erste Schicht (110) freizulegen.
13. Mundpflegeinstrument (1) nach Anspruch 12, wobei die erste Schicht (110) anzeigt, wenn das Mundpflegeinstrument (1) entsorgt oder mit zusätzlichen Mundpflegemitteln nachgefüllt werden sollte, oder wobei mindestens eine der Schichten (110, 114) ein Mundpflegemittel umfasst; oder wobei die erste Schicht (110) an dem Kopf (20) befestigt ist.

Revendications

1. Instrument de soin buccal (1) comprenant :

au moins un agent de soin buccal ;
un indicateur d'usure ; et
une tête (20) ;

caractérisé en ce que l'au moins un agent de soin buccal est fourni dans un élément amovible (100) fixé à la tête (20), lequel élément amovible (100) est conçu pour fonctionner en tant qu'indicateur d'usure.

2. Instrument de soin buccal (1) selon la revendication 1, dans lequel l'indicateur d'usure communique visuellement l'existence du au moins un agent de soin buccal.

3. Instrument de soin buccal (1) selon la revendication 1, dans lequel ledit indicateur d'usure comprend une première couche (114) et une seconde couche (110), la seconde couche (110) ayant une partie qui devient exposée, et dans lequel l'une desdites couches comprend l'au moins un agent de soin buccal.

4. Instrument de soin buccal (1) selon la revendication 3, dans lequel ladite seconde couche (110) comprend un matériau ayant des cavités qui comprennent ledit au moins un agent de soin buccal.

5. Instrument de soin buccal (1) selon la revendication 3, dans lequel ladite seconde couche (110) est fixée de façon amovible à une partie de la tête (20) dudit instrument de soin buccal (1) ; dans lequel, éventuellement, ladite seconde couche (110) est fixée dans une partie en creux (118) de ladite tête (20).
6. Instrument de soin buccal (1) selon la revendication 1, dans lequel ledit indicateur d'usure comprend une pluralité de matériaux différents qui, lorsqu'ils sont en contact, indiquent que l'au moins un agent de soin buccal est épuisé ; comprenant éventuellement, en outre, une première couche qui agit comme une barrière entre la pluralité de matériaux différents qui s'use pour permettre à la pluralité de matériaux différents d'être en contact.
7. Instrument de soin buccal (1) selon la revendication 1, comprenant en outre un élément pouvant être rompu sur au moins une surface de l'instrument de soin buccal (1), ledit élément pouvant être rompu comprenant au moins un agent de soin buccal.
8. Instrument de soin buccal (1) selon la revendication 1, dans lequel la tête (20) présente une pluralité de cavités ouvertes sur l'extérieur (50) qui comprennent au moins un agent de soin buccal.
9. Instrument de soin buccal (1) selon la revendication 8, dans lequel une première desdites cavités (50) comprend un premier agent de soin buccal et une deuxième desdites cavités (50) comprend un second agent de soin buccal, ledit premier agent de soin buccal étant différent dudit second agent de soin buccal ; dans lequel, éventuellement, ledit premier agent de soin buccal est libéré à une première vitesse et ledit second agent de soin buccal est libéré à une seconde vitesse, qui est différente de ladite première vitesse.
10. Instrument de soin buccal (1) selon la revendication 8, dans lequel au moins une desdites cavités (50) comprend un premier agent de soin buccal agencé par rapport à un second agent de soin buccal de telle sorte que ledit premier agent de soin buccal soit proche d'une surface extérieure de ladite tête (20) par rapport audit second agent de soin buccal ; ou dans lequel au moins une desdites cavités (50) comprend un premier agent de soin buccal et un second agent de soin buccal de telle sorte que lesdits premier et second agents de soin buccal sont tous deux exposés de manière sensiblement simultanée sur une surface extérieure de ladite tête (20).
11. Instrument de soin buccal (1) selon la revendication 1, dans lequel la tête (20) présente une pluralité de
- cavités (50), et dans lequel lesdites cavités (50) comprennent des agents de soin buccal supplémentaires qui sont libérés à des vitesses différentes.
12. Instrument de soin buccal (1) selon la revendication 1, dans lequel ledit indicateur d'usure comprend une première couche (110) et une seconde couche (114) qui est modifiée chimiquement ou mécaniquement afin d'exposer ladite première couche (110).
13. Instrument de soin buccal (1) selon la revendication 12, dans lequel ladite première couche (110) indique lorsque l'instrument de soin buccal (1) doit être mis au rebut ou rechargé avec des agents de soin buccal supplémentaires ; ou dans lequel au moins une desdites couches (110, 114) comprend un agent de soin buccal ; ou dans lequel ladite première couche (110) est fixée à la tête (20).

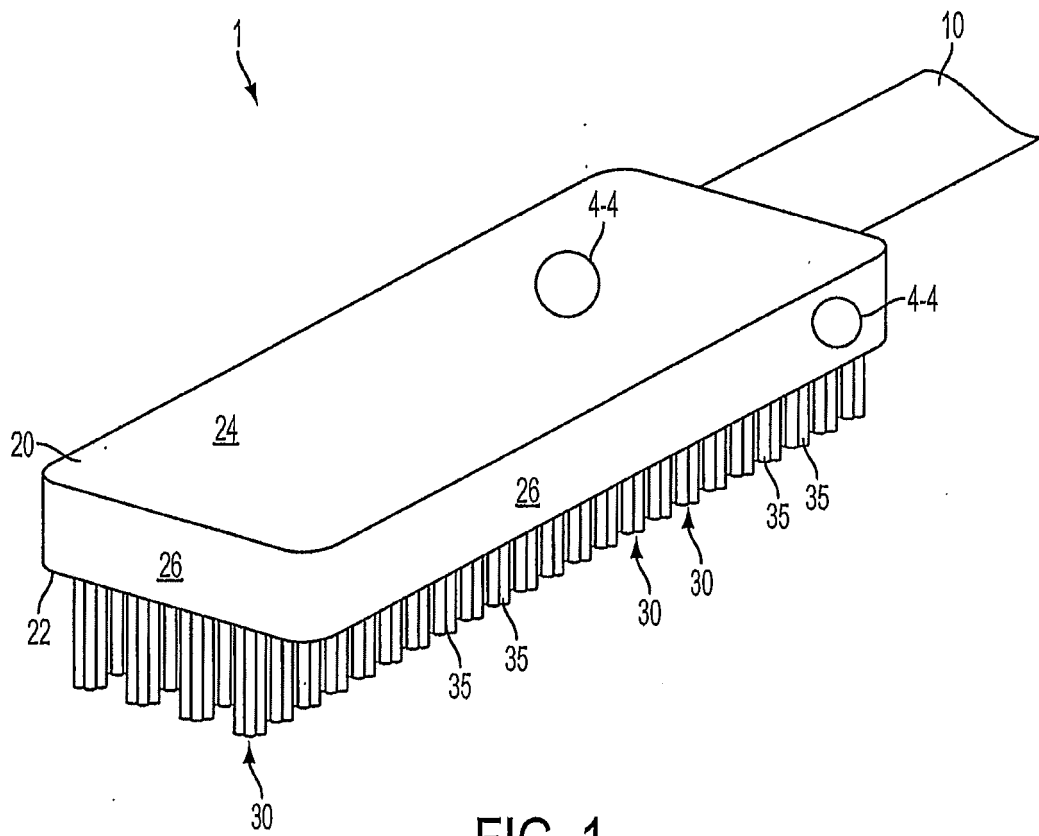
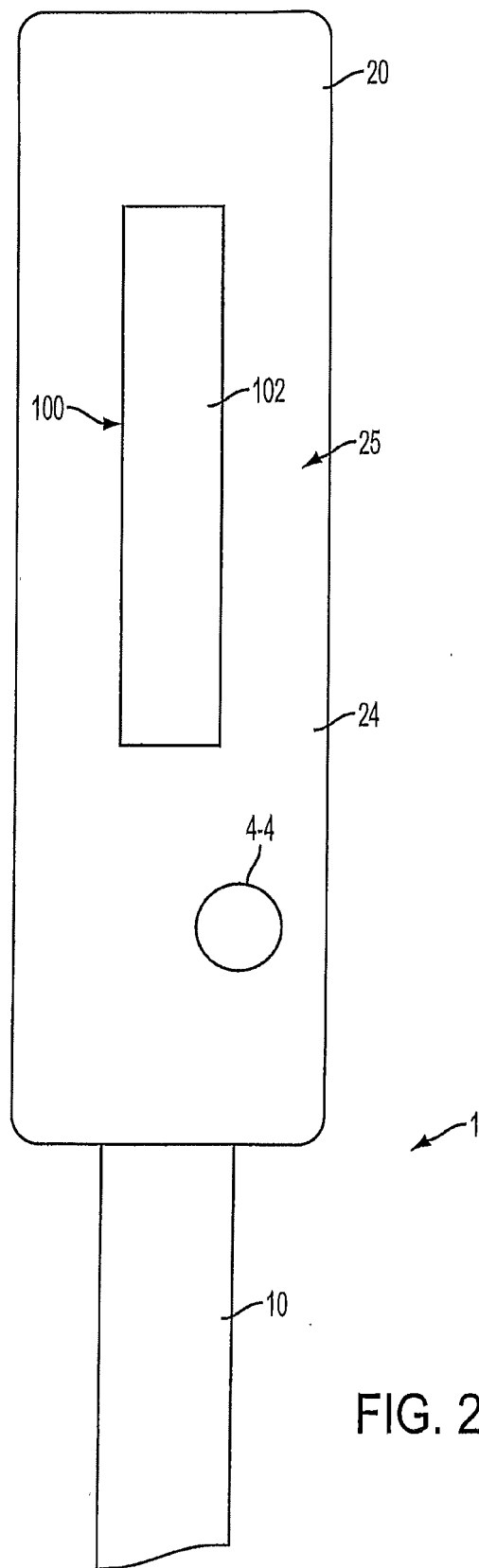
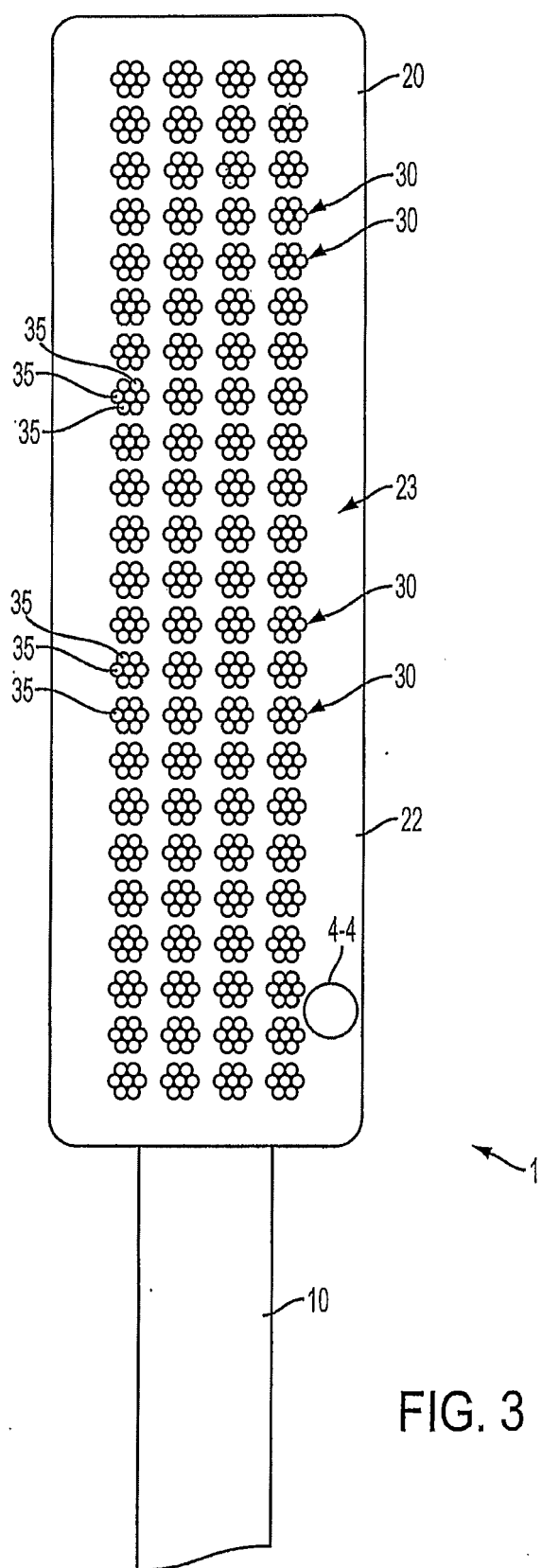


FIG. 1





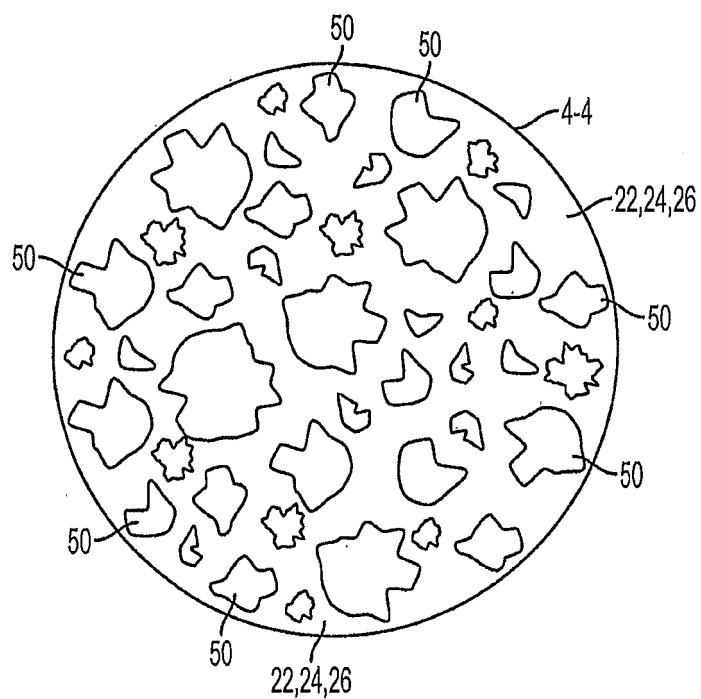


FIG. 4

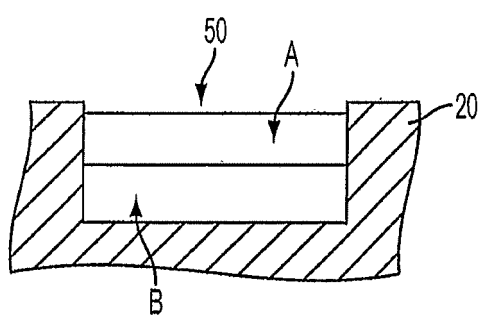


FIG. 5

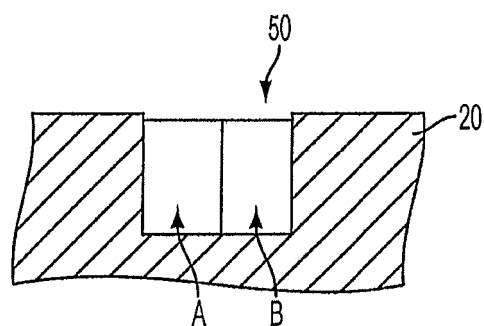


FIG. 6

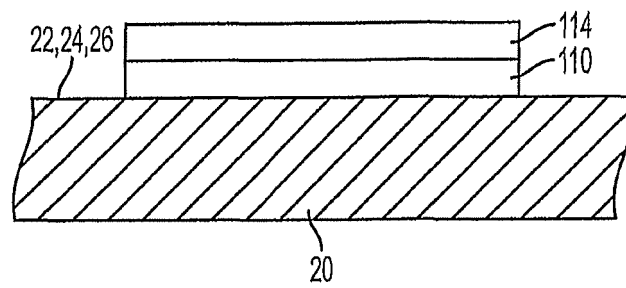


FIG. 7

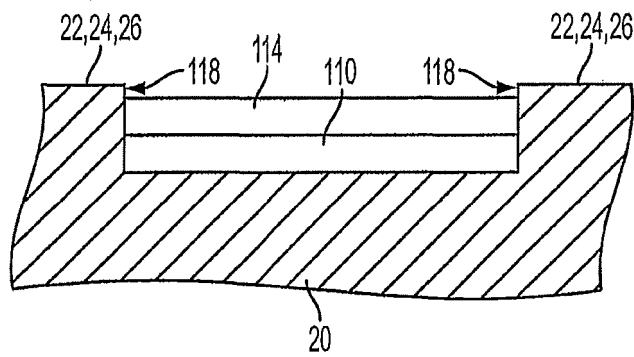


FIG. 8

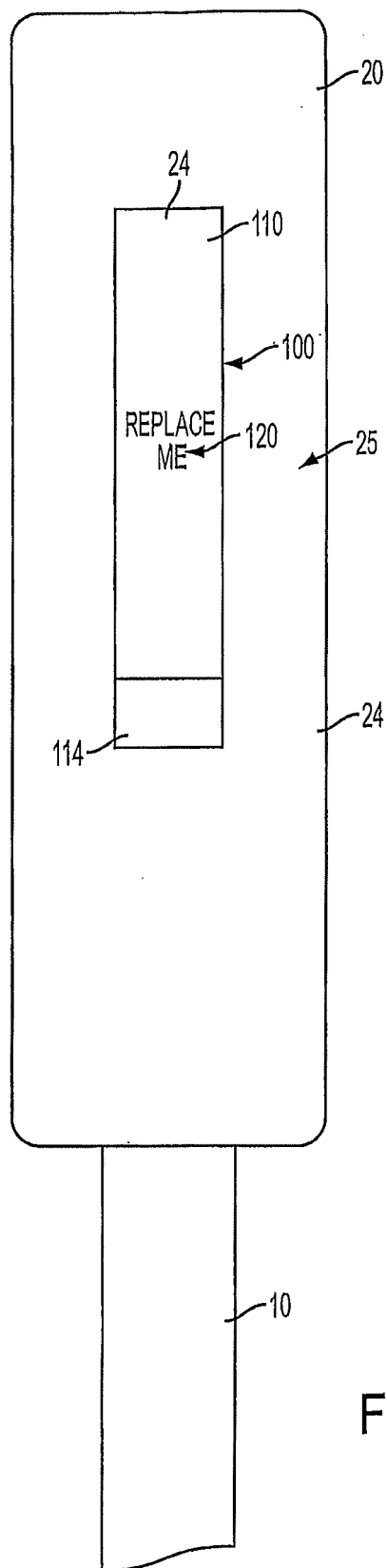


FIG. 9

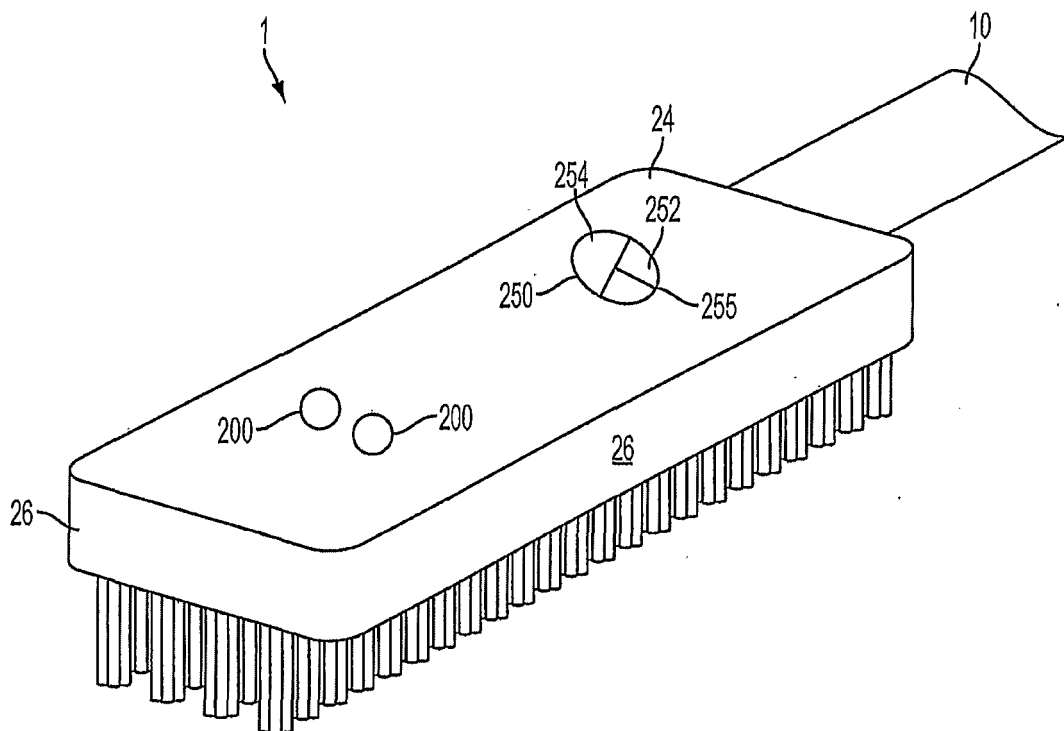


FIG. 10

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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