(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 132 021 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
12.09.2001 Bulletin 2001/37

(51) Int Cl.[7]: **A46B 5/04**, A45D 44/18

(21) Application number: **01302010.2**

(22) Date of filing: **06.03.2001**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **07.03.2000 JP 2000062371**

(71) Applicant: **UNI-CHARM CORPORATION**
Kawanoe-shi Ehime-ken (JP)

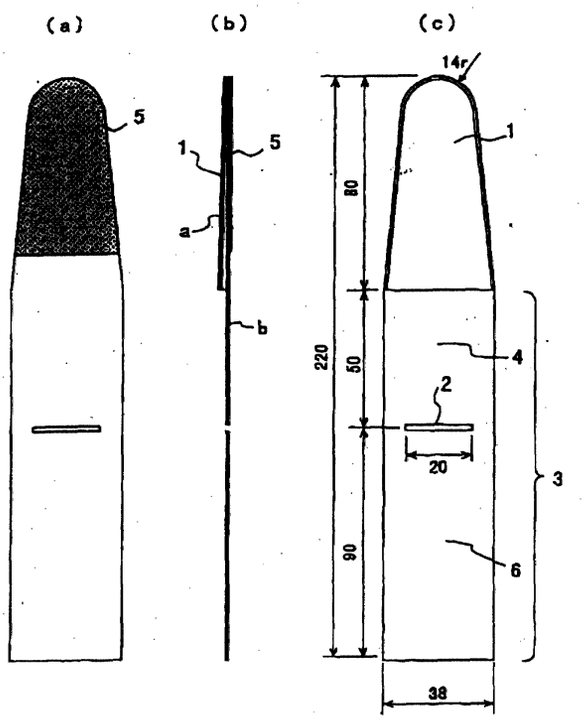
(72) Inventors:
- **Tsuji, Tomoko, c/o Technical Center**
  Mitoyo-gun, Kagawa-ken 769-1602 (JP)
- **Tanaka, Yoshikazu, c/o Technical Center**
  Mitoyo-gun, Kagawa-ken 769-1602 (JP)

(74) Representative: **Parry, Christopher Stephen**
Saunders & Dolleymore,
9 Rickmansworth Road
Watford, Herts. WD18 0JU (GB)

(54) Finger toothbrush

(57) The inventions concern a finger toothbrush including a finger sack portion having a friction surface at least on one outer side thereof, an extension connected to an opening of the finger sack portion, and a slit/slits or a hole/holes provided in a substantially intermediate region of the extension, and a finger toothbrush package unit, wherein a plurality of finger toothbrushes, the friction surfaces of which are hermetically sealed, are connected together. The finger toothbrush is advantageously easy to attach and detach, hygienic, and free from the danger of being inadvertently swallowed.

Fig. 4



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Description

TECHNICAL FIELD

[0001] The present invention relates to a finger toothbrush which is attached to a finger when used, and to a finger toothbrush package unit. More specifically, the present invention relates to a disposable finger toothbrush which can be easily attached to and detached from the finger and which is hygienic, and to a package unit of such finger toothbrushes.

BACKGROUND ART

[0002] When brushing one's teeth or massaging the gums to prevent tooth decay, pyorrhea or the like, a bar-shaped toothbrush having a bar-shaped handle portion and a brush portion is usually used. However, when using an ordinary bar-shaped toothbrush, the gums might be damaged or remain partly un-brushed. To prevent these, there has been provided a finger toothbrush which is attached to a finger for use. Further, for those for whom it is difficult to use a bar-shaped finger toothbrush, such as infants, the aged, or physically handicapped persons, the finger toothbrush, which can be attached to a finger to make it possible to brush one's teeth with the finger, is highly useful.

[0003] A conventionally known example of the finger toothbrush is composed of a flexible sleeve and brush provided on one side of the sleeve (Japanese Patent Publication No.1970-3709, see Fig. 1). This conventional toothbrush is easily detached from the finger and might be inadvertently swallowed.

[0004] In view of this, there has been provided a finger toothbrush which is free from the danger of inadvertent swallowing. The finger toothbrush is produced by stacking together two sheets of non-woven fabric so as to form a sack, and one of the non-woven fabric sheets is extended from the opening of the sack to form a tongue-like portion, an adhesive member being provided on the inner side of the tongue-like portion (Japanese Utility Model Laid-Open No.1994-143, see Fig. 2). However, this finger toothbrush has a problem in that, when some water, powder or the like is on the finger. the adhesive member cannot exhibit its adhesion effect, so that, when attached to the finger, the toothbrush is easily detached therefrom, or the sack main body is allowed to rotate when the finger is bent or stretched. Furthermore, this finger toothbrush has some problem in that, the liquid like substance coming from the mouth while it is in use flows downwards along the tongue-like portion, thereby contaminating the hand or the finger.

[0005] Apart from this, Japanese Patent Laid-Open No.1998-503409 discloses a finger-mounted toothbrush comprising a fingerstall-like cap part which can be placed on a finger, a bristled cleaning element held on an action surface of the cap part, and a holding part guided along the inner side of the finger, wherein the holding part is a resiliently elastic holding shaft, which substantially extends the interior of the palm of the hand in the mounted state (See Fig. 3). This finger-mounted toothbrush is designed so as to be easy to attach and detach and free from undesired rotation or detachment and so as to be free from inadvertent swallowing. However, the holding handle must be maintained in the gripped state while the finger toothbrush is being used, so that this toothbrush is rather difficult to use, in particular, for infants, the aged, or physically handicapped persons, who have a weak grip.

DISCLOSURE OF THE INVENTION

[0006] The present invention has been made with a view toward solving the above problems in the prior art. It is accordingly an object of the present invention to provide a finger toothbrush which is easy to use for infants, the aged, and physically handicapped persons, who have a weak grip and are hardly capable of gripping things, which is not subject to undesired detachment from the finger, which can be easily attached and detached, which is hygienic, and which is free from inadvertent swallowing. Another object of the present invention is to provide a finger toothbrush in which it is possible to prevent the finger or the hand from being contaminated when the toothbrush is attached or detached or when it is in use.

[0007] After careful investigation, the present inventors have succeeded in solving the above problems. In accordance with the present invention, there are provided:

(1) A finger toothbrush comprising a finger sack portion having a friction surface at least on one outer side thereof, an extension connected to an opening of the finger sack portion, and a slit/slits or a hole/holes provided in a substantially intermediate region of the extension;
(2) A finger toothbrush according to (1), wherein the slit is provided perpendicularly with respect to the longitudinal direction of the extension;
(3) A finger toothbrush according to (2), wherein a plurality of slits are arranged in parallel;
(4) A finger toothbrush according to (1), wherein the slit is provided parallel to the longitudinal direction of the extension; and
(5) A finger toothbrush package unit, wherein a plurality of finger toothbrushes according to any one of (1) to (4), the friction surfaces of which are hermetically sealed, are connected together, for example side by side.

[0008] The finger toothbrush of the present invention has an extension connected to the finger sack portion, and a slit/slits or a hole/holes provided in the substantially intermediate region of the extension, whereby it is possible to fasten the finger sack portion to the finger

so as not to come off solely by inserting one finger of one hand into the finger sack portion, raising and turning up the drooping end portion of the extension with the fingers of the other hand to pass the finger through the slit or the hole, and pushing down the extension. Further, as a result of this fastening operation, it is possible to prevent liquid dripping due to the turn-up portion formed at the base of the finger, making it possible to prevent the finger or the hand from being contaminated while the toothbrush is in use. Furthermore, since it is possible to secure the finger sack portion in position due to the slit or the hole, it is possible to prevent the finger toothbrush from being detached from the finger, thereby eliminating the danger of the toothbrush being inadvertently swallowed.

[0009] As for the finger toothbrush package unit of the present invention, it is compact in size, and the friction surfaces are hermetically sealed. Thus, it is hygienic and convenient when it is distributed or stored for sale or when it is kept or carried about on a trip or the like after the purchase.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010]

Fig. 1 shows an example of a conventional finger toothbrush;
Fig. 2 shows another example of a conventional finger toothbrush;
Fig. 3 shows still another example of a conventional finger toothbrush;
Fig. 4 shows an embodiment of the finger toothbrush of the present invention;
Fig. 5 shows another embodiment of the finger toothbrush of the present invention;
Fig. 6 shows an embodiment of the friction surface of the finger sack portion of the present invention;
Fig. 7 sequentially shows how the finger toothbrush is attached to the finger;
Fig. 8 shows how the finger toothbrush of the present invention is detached from the finger after use;
Fig. 9 is a sectional view showing an embodiment of the finger toothbrush package unit of the present invention;
Fig. 10 shows a finger toothbrush package unit according to the present invention in which finger toothbrushes are connected together; and
Fig. 11 shows another embodiment of the finger toothbrush package unit of the present invention.

BEST MODE FOR CARRYING OUT THE INVENTION

[0011] The present invention will now be described in detail with reference to the drawings. The present invention however should not be limited thereby.

[0012] Fig. 4 shows an embodiment of the finger toothbrush of the present invention. Fig. 4(a) is a front view of the obverse side of a finger toothbrush, Fig. 4 (b) is a side view thereof, and Fig. 4(c) is a backside view thereof. A finger sack portion (1) is a sack-like portion into which a finger of the user, such as the thumb or the index finger, is to be inserted. A long and narrow extension (3) is connected to the opening of the finger sack portion (1), and a slit (2) is provided in a substantially intermediate region of the extension (3) so as to be perpendicular to the longitudinal direction of the extension. Further, provided on one side of the finger sack portion is a friction surface (5) for brushing the teeth or massaging the gums. The region of the extension (3) which is near the finger sack portion constitutes a turn-up portion (4), and the region thereof which is near the forward end of the extension constitutes a grip portion (6) for attachment and detachment.

[0013] The dimensions showing in Fig. 4(c) are only given by way of example. Various dimensions are possible according to use.

[0014] The finger sack portion (1) can be formed by shaping a single piece of cloth-like material into a ring or by gluing together two pieces of cloth-like material. The size of the finger sack portion is determined such that the finger of the user can be easily inserted into it and that it is not easily detached from the finger. For an adult, the width of the portion near the forward end is 20 to 30 mm, and more preferably, 25 to 30 mm, and the width of the opening is 25 to 50 mm, more preferably, 35 to 45 mm, and most preferably, approximately 40 mm. When the finger sack portion is too short, there is too much play between it and the finger, and it is subject to undesired detachment therefrom. On the other hand, when the finger sack portion is too long, the finger does not reach the forward end, making the toothbrush difficult to handle. The length of the finger sack portion is preferably.approximately 40 to 100 mm, and more preferably, approximately 60 to 80 mm.

[0015] The length of the extension (3) is preferably approximately double the length of the finger sack portion (1). When it is too short, it cannot cover the friction surface at the time of attachment and detachment, which is inconvenient. When it is too long, it results in a deterioration in terms of ease of handling and compactness in size. For an adult, the length preferably ranges from 100 to 240 mm, and more preferably, approximately 140 to 200 mm. It is desirable that the width of the extension be approximately the same as the width of the opening of the finger sack portion.

[0016] The region of the extension which is near the finger sack portion constitutes the turn-up portion (4), which forms a turn-up edge when the finger toothbrush is attached to the finger. Due to this turn-up edge, it is possible to stop the liquid-like substance coming from the mouth during brushing, thereby preventing liquid dripping.

[0017] The length of the turn-up portion varies depending on the position at which the slit or the hole is

provided. It is desirable that its length as measured from the finger sack portion range is approximately 50 to 70 mm.

[0018] The region of the extension near the forward end constitutes the grip portion (6). When the finger toothbrush is attached or detached to or from the finger, the grip portion is gripped with the fingers of the other hand to make it.possible for the finger sack portion or the other finger to be inserted into the slit.

[0019] The slit (2) is provided substantially in the intermediate region of the extension. The length of the slit is preferably smaller than the width of the opening of the finger sack portion, and somewhat larger than 1/2 of the circumferential dimension of the finger. By making the length of the slit smaller than the width of the opening of the finger sack portion and somewhat larger than 1/2 of the circumferential dimension of the finger, the finger sack portion is tightened when it is inserted into the slit, thereby fastening it to the finger. For an adult, the size of the slit is approximately 20 to 30 mm, and more preferably, approximately 20 to 25 mm.

[0020] The slit may be provided so as to be perpendicular to the longitudinal direction of the extension, as shown in Fig. 4, or it may be provided so as to be parallel to the longitudinal direction of the extension, as shown in Fig. 5(a). Providing the slit so as to be perpendicular to the longitudinal direction of the extension is more advantageous in that the finger sack portion is more easily secured in position and stabilized. It is also possible to provide a plurality of slits in parallel, as shown in Fig. 5 (b). This arrangement is more desirable since it makes it possible to select an appropriate slit for use corresponding to the length of the finger of the user.

[0021] Instead of the slit, it is also possible, as shown in Fig. 5(c), to provide a hole into which the finger is to be inserted. The configuration of the hole may be circular, elliptical, square, or rectangular.

[0022] The friction surface (5) is used to clean the teeth, or to massage the gums. It is possible for the friction surface to be only arranged on one side of the finger sack portion or over the entire periphery thereof. When the friction surface is only arranged on one side of the finger sack portion, it is usually arranged on the front side thereof. However, it is also possible to arrange it on the backside thereof. Further, there is no particular restriction regarding the configuration of the friction surface arranged on the finger sack portion. It can be arranged so as to extend over the entire range of the finger sack portion or to extend over a portion thereof. Fig. 6 shows examples of the configuration of the friction surface.

[0023] Further, there is no restriction regarding the material of the friction surface as long as it can be used to clean the teeth or massage the gums. For example, it is possible to provide brush used for an ordinary toothbrush in the finger sack portion. It is also possible to glue or attach the brush to the finger sack portion. Instead of the brush, the friction surface may consist of a surface with protrusions. A member having a surface with protrusions may be glued or attached to the finger sack portion, or a material having protrusions may be employed for the finger sack portion so that the finger sack portion itself may exhibit protrusions.

[0024] Further, it is also possible to apply a dentifrice or a medicine for preventing dental caries, periodontitis, pyorrhea, etc. to the friction surface beforehand so that the effective ingredients may ooze out by friction when the finger toothbrush is used.

[0025] In the following, how the finger toothbrush of the present invention is attached, used and detached will be described.

[0026] Fig. 7 is an explanatory diagram showing an example of the attachment process.

[0027] First, a right-hand or left-hand finger is inserted into the finger sack portion (See Fig. 7(a)), and the grip portion, which is at the forward end of the extension drooping downwardly, is gripped by another hand finger and raised (See Fig. 7(b)). Then, the extension is turned up, and the finger is caused to be inserted into the slit or the hole (See Fig. 7(c)), and the extension is further pushed down to attach the toothbrush to the finger (See Fig. 7(d)). As a result of this attachment, the portion near the opening of the finger sack portion is tightened by the slit or the hole, whereby the finger sack is secured to the finger. Further, as a result of this attachment, a turn-up edge (7) is formed at the base of the finger, as shown in Fig. 7(d). Due to the formation of the turn-up edge (7) at the base of the finger, it is possible to receive, by means of the turn-up edge (7), the liquid-like substance flowing out of the mouth while the finger toothbrush is used, thereby preventing liquid dripping.

[0028] It is also possible to insert into the slit or the hole a finger other than the one inserted into the finger sack. In this case, loosing part is created in the turn-up portion, making it possible to prevent liquid dripping.

[0029] The friction surface (5) of the finger toothbrush thus attached is pressed against the teeth or the gums, and the finger is moved side to side or up and down, whereby it is possible to clean the teeth or massage the gums. while the toothbrush is in use, it is possible to prevent liquid dripping due to the edge or slack created in the turn-up portion, so that the finger or the hand can be prevented from being contaminated. Furthermore, it is possible to secure the finger sack portion in position by the slit or the hole, so that there is no fear of the finger toothbrush being detached from the finger. Thus, there is no danger of the toothbrush being inadvertently swallowed.

[0030] Fig. 8 is an explanatory diagram illustrating the process for detaching the finger toothbrush of the present invention.

[0031] As shown in Fig. 8(a), by gripping the grip portion at the end of the extension and raising it, the opening of the finger sack portion is opened and the upper portion of the finger sack portion becomes tightened, so that the finger sack portion can be easily released and

detached from the finger. Since there is no need to grip the finger sack portion with the finger, there is no fear of the finger being contaminated at the time of detachment.

[0032] Further, as shown in Fig. 8(b), while the grip portion at the end of the extension is kept gripped with the finger, the extension is turned up so as to cover the friction surface, and the toothbrush can be removed from the finger by gripping it with fingers, after the friction surface being covered with the extension. In this case also, the finger toothbrush can be disposed of, with the friction surface not being touched by the finger, so that the finger is not contaminated at the time of detachment.

[0033] Further, by inserting the forward end portion of the extension into the slit or the hole, it is possible to dispose of the toothbrush after use such that the contaminated friction surface is not exposed. Thus, the trash also can not be contaminated.

[0034] Next, the material for the finger toothbrush of the present invention will be described.

[0035] Referring to Fig. 4, the finger sack portion (1) is composed of a sack formation member (a) and a part of a base member (b) (See Fig. 4(b)).

[0036] The material of the sack formation member (a) may be the same as or different from that of the base member (b). It is desirable that the material of the sack formation member (a) is smooth enough to allow the insertion of the finger, provides a good feel to the finger inserted, and does not easily .create stuffiness. By performing embossment on the sack formation member (a) and/or the base member (b) , it is possible to make the materials of the members (a) and (b) smooth, of a good feel, and free from stuffiness. When different materials are used for the sack formation member (a) and the base member (b), and the sack formation member (a) is joined to the base member (b) by thermocompression bonding, it is desirable for the material of the sack formation member (a) to be one having an affinity for the material of the base member (b). For example, an emboss film of LLDPE (linear low density polyethylene) is used. It is desirable for the thickness of the film to be approximately 30 μm.

[0037] It is desirable for the material of the base member (b) to be waterproof to prevent the hand from getting wet or being contaminated with bacteria. Further, the material of the base member (b) is required to provide a sufficient flexibility and feeling to enable the member to conform to the movement of the hand, and an appropriate level of strength. From the viewpoint of cost and ease of processing, it is desirable to select a laminate non-woven fabric and a laminate film. Examples of the material of the base member (b) include a laminate non-woven fabric formed by laminating a resin in which the proportion of LLDPE (linear low density polyethylene) to LDPE (low density polyethylene) is 8:2 to a non-woven fabric(2d (denier), a METSUKE(basic weight) of 20 g/m2) consisting of a PE (polyethylene)/PP (polypropylene)sheath-core-type spun bond, , to a thickness of 13 μm. When using a laminate non-woven fabric, it is desirable for the laminate side to be on the inner side of the finger sack portion, which comes into contact with the finger.

[0038] The friction surface may consist of brush or protrusions. It is also possible to use a PFW (perforated web) as the material for the friction surface. A PFW is obtained by forming a large number of legged pores in a resin film by hot air jet, and the side on which the leg portions (protrusions) are formed is used as the friction surface. By using the side of the PFW having protrusions as the friction surface, it is possible to enhance the teeth cleaning effect. For example, it is desirable to adopt a PFW in which LLDPE:LDPE = 7:3 and which has a thickness of 30 μm. Further, it is possible to adopt a non-woven fabric which has undergone raising as the material for the friction surface.

[0039] The finger toothbrush of the present invention is required to be kept hygienic and be compact in size during distribution or storage before use or when it is carried about after having been purchased. After investigation for a hygienic and compact package form, the present inventors have succeeded in obtaining a finger toothbrush package unit in which a plurality of finger toothbrushes according to the present invention are connected together, with the friction surfaces of the finger toothbrushes being hermetically sealed.

[0040] Fig. 9 is a sectional view showing examples of the package unit of the present invention.

[0041] Figs. 9(a) through 9(d) show different embodiments of the package unit. By temporarily gluing a sheet-like object, indicated by symbol d, to the friction surface, each package unit is formed, with the friction surface being hermetically sealed. In the embodiment shown in Fig. 9(d), the sheet-like object d is joined to the extension (3), whereby there is advantageously no need to separate and dispose of the sheet-like object when using the finger toothbrush.

[0042] Fig. 10 shows how a plurality of individual packages are connected together. The plurality of packages connected together can be bent in a bellows-like fashion, thereby realizing a package unit which is still more compact in size (See Fig. 11).

[0043] Examples of the material of the sheet-like object covering the friction surface include paper, an aluminum sheet and a resin film. In particular, it is desirable for the sheet-like object covering the friction surface to consist of a high-quality paper which is 100% pulp and of a METSUKE (basic weight) of 30 to 50 g/m2.

EMBODIMENTS

[0044] The following specific embodiments of the present invention should not be construed restrictively.

EMBODIMENT 1

[0045] A sack formation member consisting of an LLDPE (linear low density polyethylene) emboss film having a thickness of 30 μm, a base member consisting

of a laminate non-woven fabric formed by laminating a resin in which the proportion of LLDPE (linear low density polyethylene) to LDPE (low density polyethylene) is 8:2 to a non-woven fabric(2d (denier), a METSUKE(basic weight) of 20 g/m2) consisting of a PE (polyethylene) /PP (polypropylene)sheath-core-type spun bond to a thickness of 13 μm, and a friction surface material consisting of a PFW in which LLDPE:LDPE = 7:3 and which has a thickness of 30 μm, were stacked together such that the laminate side of the laminate non-woven fabric is faced to the LLDPE emboss film, whereby a finger toothbrush for adults having the dimensions as shown in Fig. 4(c) was obtained.

EMBODIMENT 2

[0046] Five finger toothbrushes as obtained in Embodiment 1 were arranged in parallel at intervals, with their friction surfaces facing downwards, on a high-quality-paper sheet which is 300 mm long and 250 mm wide and which is 100% pulp and of a METSUKE (basic weight) of 30 to 50 g/m2, and thermocompression bonding was performed on the peripheral edge portions of the finger toothbrushes, thereby attaching the finger toothbrushes to the high-quality-paper sheet. The intermediate portions between the finger toothbrushes were perforated to prepare a bellows-like unit with perforations, thereby obtaining a finger toothbrush package unit, which can be folded up at the perforations (See Figs. 10 and 11).

INDUSTRICAL APPLICABILITY

[0047] As described above, in the finger tooth brush and the finger tooth brush package unit of the present invention, the finger sack portion is inserted into the slit or the hole when the toothbrush is used, which facilitates the attachment and detachment, is hygienic, and eliminates the danger of the toothbrush being inadvertently swallowed.

Claims

1. A finger toothbrush comprising a finger sack portion having a friction surface at least on one outer side thereof,
   an extension connected to an opening of the finger sack portion, and a slit/slits or a hole/holes provided in a substantially intermediate region of the extension.

2. A finger toothbrush according to claim 1, wherein the slit is provided perpendicularly with respect to the longitudinal direction of the extension.

3. A finger toothbrush according to claim 2, wherein a plurality of slits is arranged in parallel.

4. A finger toothbrush according to claim 1, wherein the slit is provided parallel to the longitudinal direction of the extension.

5. A finger toothbrush package unit, wherein a plurality of finger toothbrushes according to any one of claims 1 to 4, the friction surfaces of which are hermetically sealed, are connected together.

Fig. 1

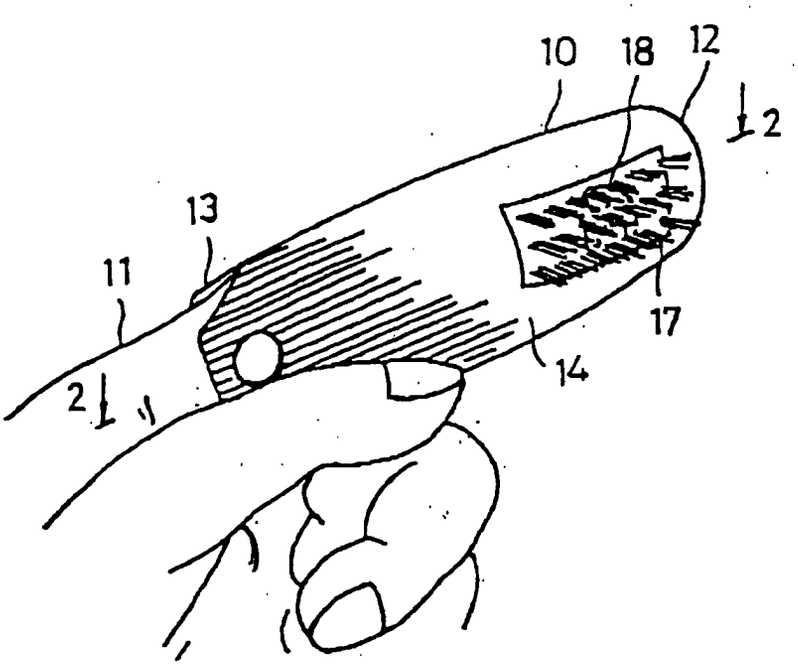


Fig. 2

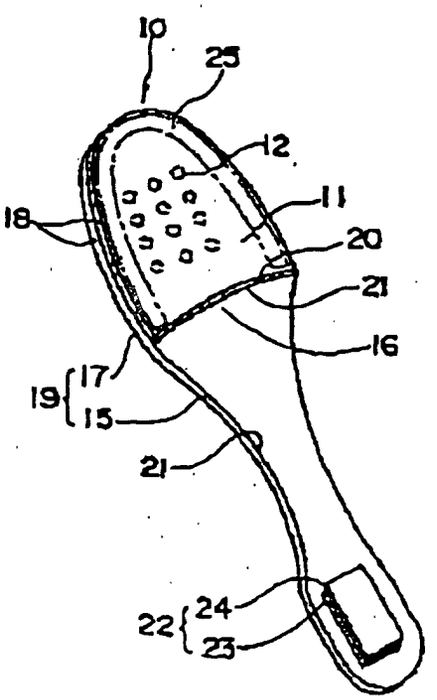


Fig. 3

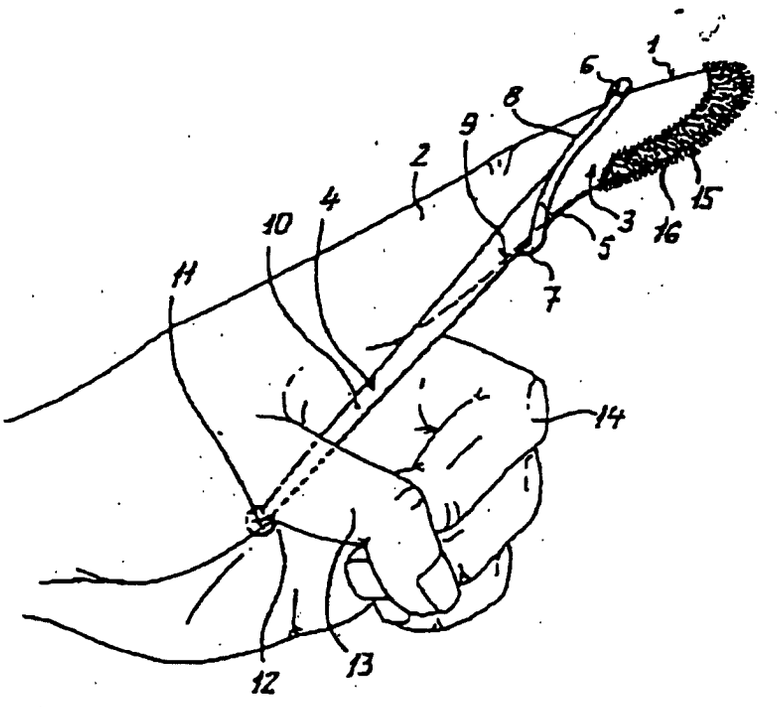


Fig. 4

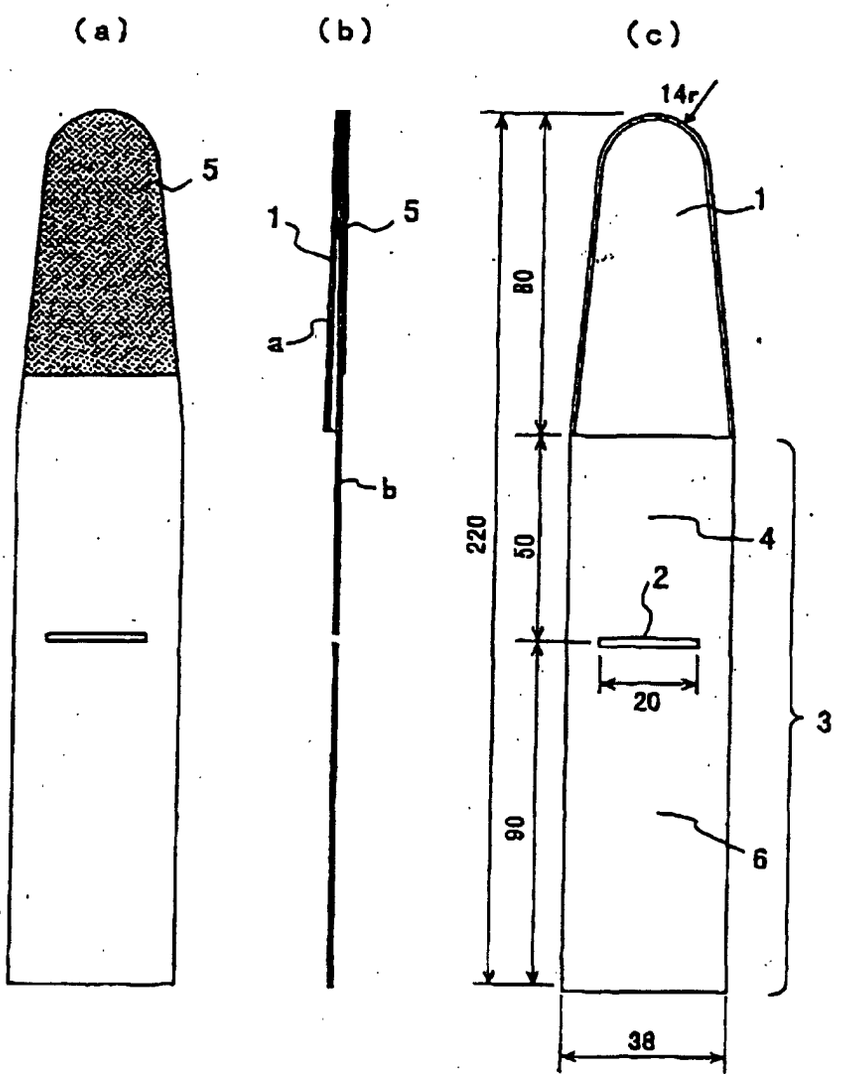


Fig. 5

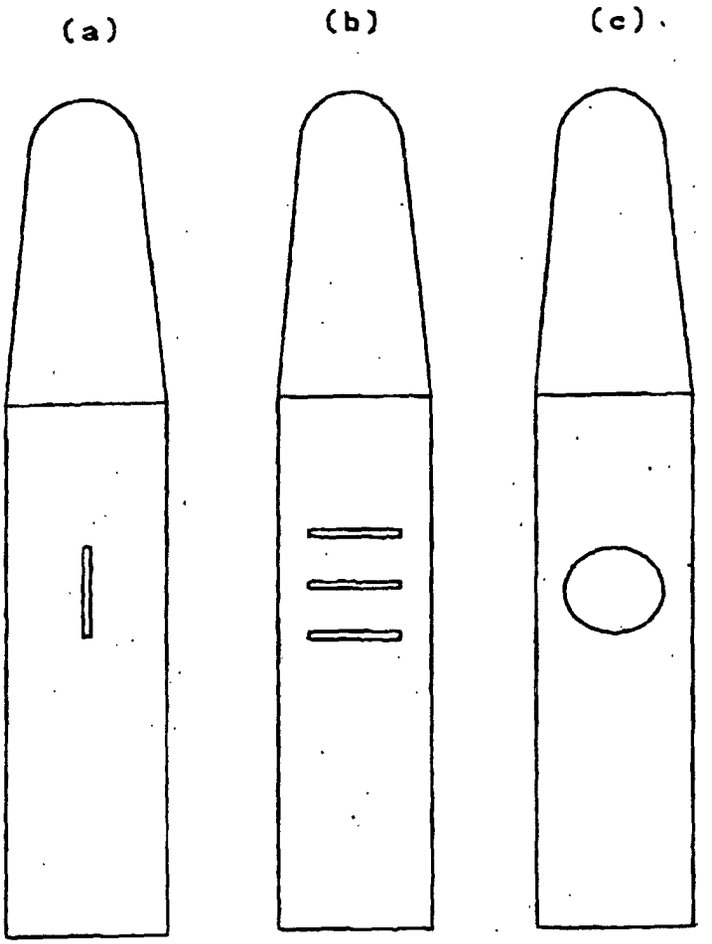


Fig. 6

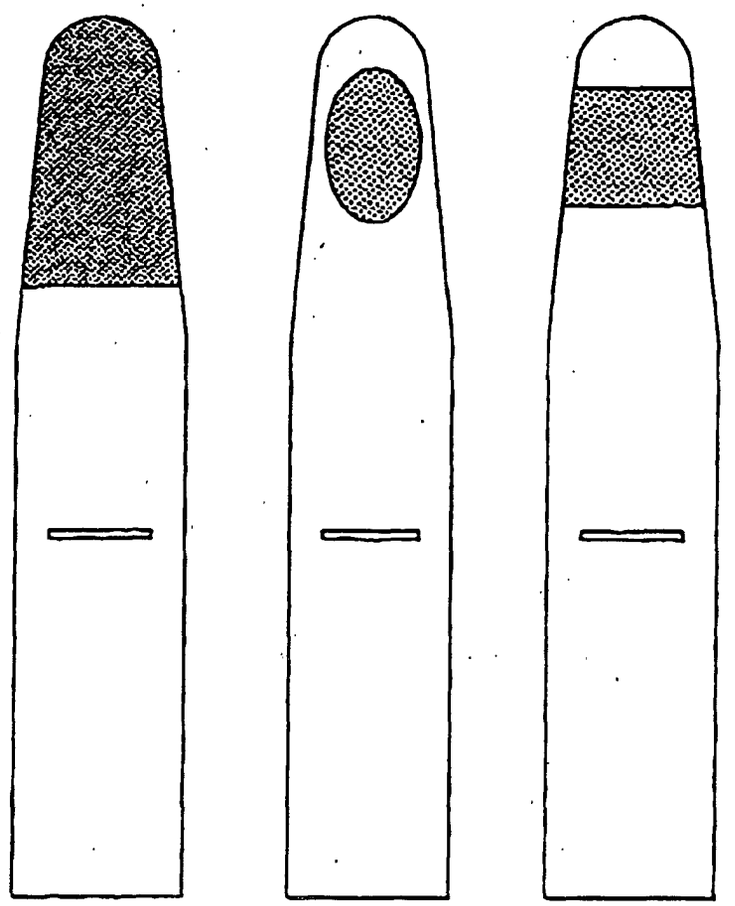


Fig. 7

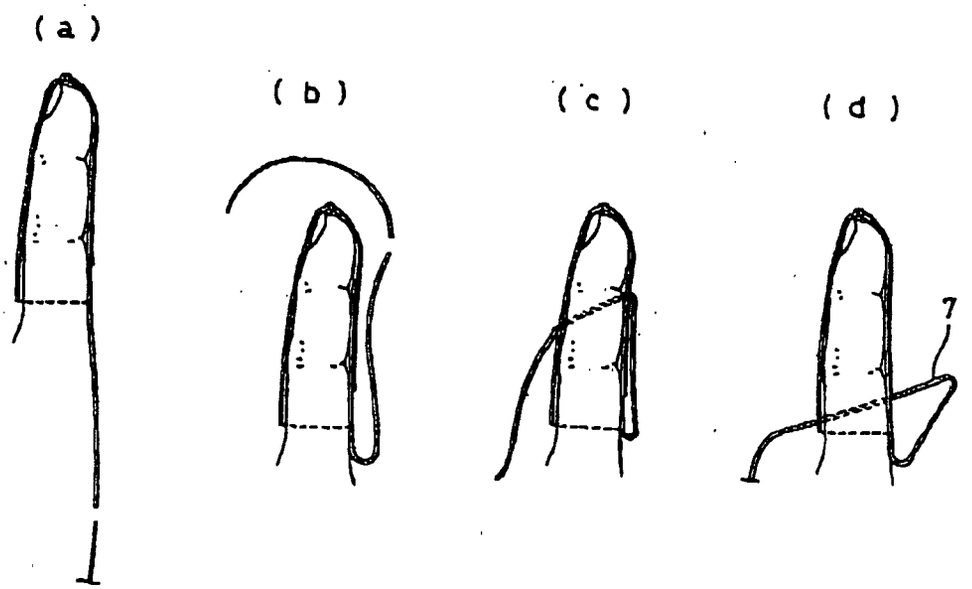


Fig. 8

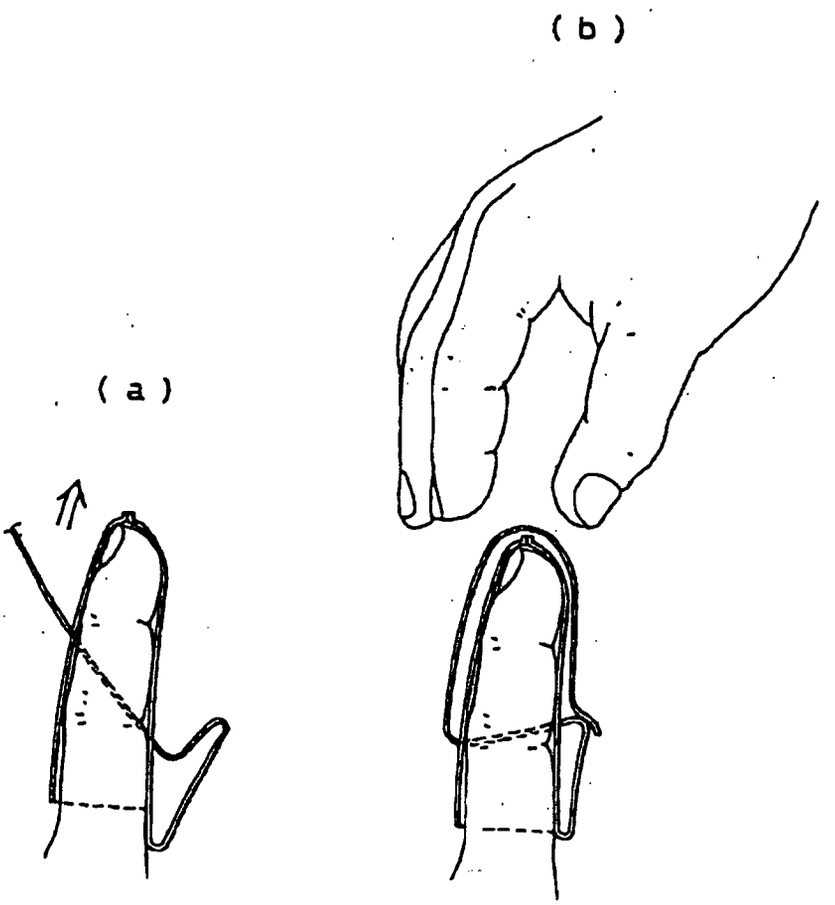


Fig. 9

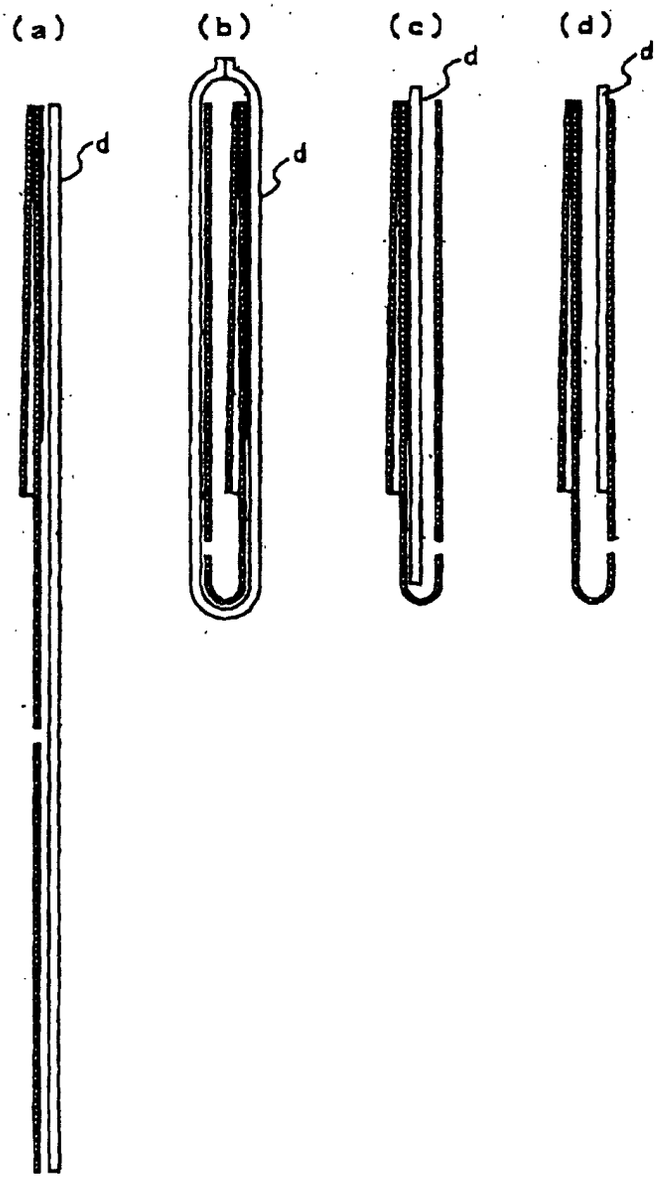


Fig. 10

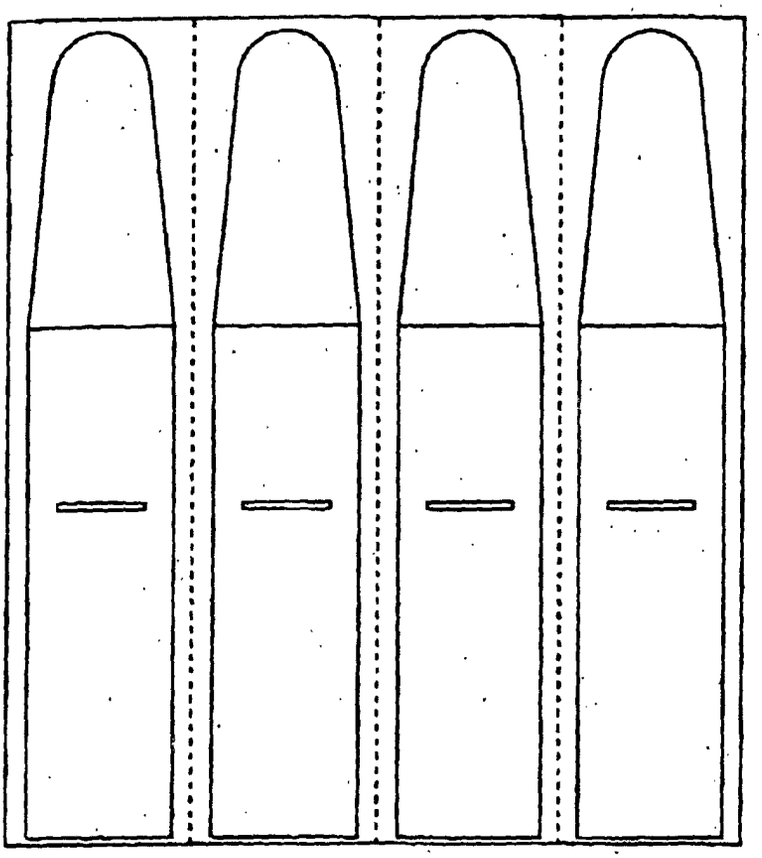
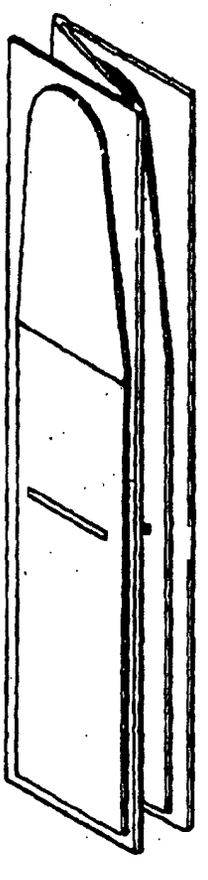


Fig. 11



European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 30 2010

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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A	* figures 5-8 *	5	
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X	GB 324 237 A (REGINALD DAVID BELL) 23 January 1930 (1930-01-23) * figures 1,3 *	1	
X	GB 2 122 482 A (FISHMAN AVRAHAM) 18 January 1984 (1984-01-18) * figures 3-6 *	5	
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