

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
11 November 2010 (11.11.2010)

PCT

(10) International Publication Number  
**WO 2010/127406 A1**

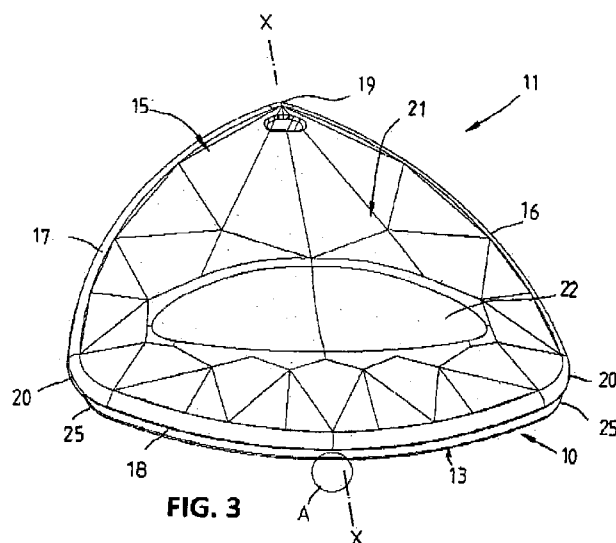
- (51) International Patent Classification:  
A61B 17/50 (2006.01) A47K 7/02 (2006.01)
- (21) International Application Number:  
PCT/AU2010/000531
- (22) International Filing Date:  
7 May 2010 (07.05.2010)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
2009901998 7 May 2009 (07.05.2009) AU
- (71) Applicant (for all designated States except US): SKN CORP PTY LTD [AU/AU]; PO Box 919, Robina DC, Gold Coast, Queensland 4230 (AU).
- (72) Inventors; and  
(75) Inventors/Applicants (for US only): DURSO, Roberto, Francesco [AU/AU]; PO Box 919, Robina DC, Gold Coast, Queensland 4230 (AU). LONGTON, Colin, Douglas [AU/AU]; PO Box 919, Robina DC, Gold Coast, Queensland 4230 (AU).
- (74) Agent: GARDNER, John R., G.; Suite 398, 15 Albert Avenue, Broadbeach, Gold Coast, Queensland 4218 (AU).

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

(54) Title: METHOD AND APPARATUS FOR EXFOLIATION



(57) Abstract: A hand tool (11) for exfoliation of the skin, the tool (11) comprising a main body (15) having a convexly curved side (18) and a thin planar element (10) substantially within the body (15) and having an exposed outer end (13) for contact with the skin, the outer end (13) being convexly curved along its length and there being a plurality of transverse striations (23) in the end (13). A method of exfoliation using the tool (11) and method of manufacturing the tool (11) are also disclosed.

WO 2010/127406 A1

## METHOD OF AND APPARATUS FOR EXFOLIATION

### Technical Field

This invention relates to a method and apparatus for exfoliation and in particular although not exclusively to a method of and apparatus for cleansing the skin by removing excess dead skin cells and other materials from the skin, which massages and smoothes the skin's surface and which enhance the appearance of the skin. The present invention also relates to an exfoliation tool for use in the above method and a method of manufacturing the exfoliation tool.

### Background Art

The appearance and health of the skin particularly the skin on the face is important to many people at least in western societies. Skin pores however being usually exposed to the atmosphere are subject to bacteria build up as well as grime which affects the appearance of the skin. Outer skin cells that are skin cells in the epidermis also continually die and this also reduces skin appearance. This process is called desquamation whereby the excess dead skin cells flake off over a period of approximately 28 days. Other factors affect the rate of desquamation including for example, age, skin type, smoking, pollution and the environment in which one lives. A large range of cosmetic skin treatment products are available which are applied to skin to improve the appearance and health of the skin. These materials however also tend to build-up within the pores of the skin. At the same time pores may become blocked by excess dead skin cells building up around the pores and the natural process of the skin producing oils, which at times may lead to blemishes and infections. Another problem encountered by both men and women is that of ingrown hairs which can cause infections in a skin pore. Men with fast growing facial hair also often find shaving difficult because the surface of the skin is not adequately smoothed or because of the condition of the skin itself.

Many different methods and devices are available for treatment of the skin for the purposes of removing excess dead skin cells or any other materials such as makeup or debris to improve skin appearance. For example pumice, loofahs and other abrasive devices are available and are used by applying the devices to the skin and scrubbing the skin with such devices for cleaning the skin and/or removing skin cells. Whilst these devices are partly effective in this application, they can cause irritation to the skin particularly if the skin is scrubbed excessively. Abrasive and chemical lotions can also

be applied to the skin however lotions of this type can also cause irritation. Long-term benefits of such procedures can only be achieved by continually replacing products such as loofas or lotions, or repeating treatments at additional cost.

An alternative means for treating the skin is to use laser therapy or micro dermabrasion. Laser therapy procedures however can be relatively expensive and since the procedures may penetrate into the strata corneum and to the deeper layers of the skin, they may have unwanted side effects. Thus the results of laser therapy can be quite variable.

Skin exfoliation tools which are known are designed to remove dead cells from the skin's surface by mechanical means, thus removing surface debris. Skin exfoliation is suitable for greasy or normal skin, but should be used with caution on dry or sensitive skin. Currently known skin exfoliators however have limited effectiveness and some exfoliation tools are not suitable for a wide range of skin types.

It would be desirable to provide an improved method of and apparatus for exfoliation which is effective in removing excess dead skin cells and other materials from the skin of a person which overcomes or alleviates the above disadvantages or which at least provides a useful choice to a consumer.

### **Summary of the Invention**

The present invention thus provides in a first preferred aspect although not necessarily the broadest aspect, a hand tool for exfoliation of the skin, said tool comprising a main body having a convexly curved first side, a thin planar element substantially within said body and having an exposed outer end for contact with the skin, said outer end being convexly curved along its length and being positioned outwardly of said convexly curved side of said body, and wherein a plurality of striations are provided in said end.

The thin planar element includes opposite side faces which lie in substantially parallel planes and intersect the end of the element to form opposite side edges defining the boundaries of the end of the element.

Preferably the striations are regularly spaced along the end and extend transversely of the end between the opposite side faces and edges. The striations are typically in the form of a series of ridges and furrows or grooves which extend parallel to each other. Most preferably the striations extend substantially normal to the opposite faces of the element but may be angled to the faces. Preferably the striations are provided

substantially along the full length of the end of the element.

Preferably at least one of the faces of the element has a mirror or reflective finish at least adjacent to the element end. Preferably both faces of the element have the aforesaid mirror or reflective finish.

Preferably the element has a thickness between the side faces which is no more than 1.00 mm. Most preferably the element has a thickness of 0.55mm.

Preferably the end is at a substantially constant distance from the curved side of the body along substantially the full length of the curved side such that the end of the element is substantially parallel to the one side of the body. The end is suitably located close to the curved side of the body so as to project only a short distance outwardly of the body. Typically the end extends from about 1.00 to 3.00 mm. from the curved side of the body. The end most preferably is spaced about 1.5mm from the body for substantially its full length.

The element may be of blade-like form, without a bevel, and may suitably comprise or may be formed of a thin substantially planar member or material of metal such as stainless steel having opposite parallel faces and the element suitably has a squared-off end. As stated above the opposite side faces of the planar member suitably intersect the end of the planar member substantially normal thereto to define the opposite edges of the end which are thus relatively blunt being formed by intersection right-angles surfaces. The edges are thus keen but non-sharp non-invasive edges.

The end of the element is suitably formed in a laser cutting process. Preferably the skin contacting element is laser cut from a sheet of the aforementioned material or member. Preferably the striations are formed by the laser cutting process. Thus movement of the laser cutter is controlled or the laser is operated to form the series of ridges and furrows or grooves in the end which define the striations. Preferably the mirror or reflective finish in the face or faces is achieved by mechanical polishing of the face/s of the element at least adjacent the end.

Preferably the body is formed of a plastics material and is moulded about the skin contacting element such that no gap or space exists between the body and skin contacting element. Preferably the body is injection moulded about the element. Preferably to ensure that the element is firmly held by the body, the element is provided with a series of openings or apertures through which the plastics material of the body passes during the injection moulding process. Preferably the openings or apertures are provided at

spaced positions in the element and along a line substantially parallel to the end.

In one embodiment, the body is provided with a cavity on at least one face for locating the fingers or thumb of a user so that the body forms a handgrip. The cavity is suitably arranged generally centrally of the body. The cavity suitably extends in the same direction as the one side of the body and extends symmetrically relative to a central line of symmetry of the body passing through the one side of the body. The cavity suitably is concave in cross section. The cavity suitably is of generally oval configuration plan view. Preferably cavities of the above type are provided in opposite faces of the body.

In another embodiment, a handle may extend from the body. The handle may be integrally formed with the body such as by injection moulding and the handle suitably extends in a direction transversely of the plane of said body and preferably substantially at right angles to the body. The handle is suitably of elongated form and may be of various sizes to suit the application. Thus the handle may be of extended length where for example exfoliation of the back is required.

The present invention provides in another preferred aspect, a method of manufacturing a hand tool for exfoliation of the skin, said method including the step of forming a thin planar metal element having convexly curved end and a plurality of striations in said end, and moulding a plastics body around said element whilst leaving said convexly curved end exposed for contact with the skin.

Preferably the element is formed with a plurality of apertures or openings adjacent the convex curved end, and wherein said body is moulded to said element through said apertures or openings to bond said element to said body.

In another preferred aspect, the present invention provides a hand tool for exfoliation of the skin comprising a thin planar element having an exposed outer end for contact with the skin and wherein a plurality of striations are provided in said end, said striations extending transversely of said end.

The present invention in another aspect provides a method of exfoliation, said method including the steps of applying water to the skin and applying an end of a thin planar skin contacting element to the skin such that the element extends substantially at 90 degrees to the skin, said end being provided with a plurality of striations, and moving the skin contacting element over the skin to clean the skin's surface.

Preferably the method is undertaken using an exfoliator tool of one of the forms

described above and thus the tool and skin contacting element preferably have the above described features. Thus the end of the thin planar element is suitably convexly curved along its length and the striations extend transversely of the end between opposite faces of the element.

Preferably, the skin's surface is thoroughly wetted and moistened (preferably with warm water) prior to exfoliation. Preferably the end of the skin contacting element is applied with comfortable pressure against the skin and the exfoliator tool is then moved across the skin's surface such that the end of the element cleans, massage and smooth the skin's surface. The pressure applied determines the amount of exfoliation achieved, and the area exfoliated is cleared of moisture, excess dry dead skin cells and debris.

The exfoliation process thus achieves in one action, (a) cleansing the skin by removing excess dead skin cells and other materials from the skin, (b) massaging the skin's surface and (c) smoothing the skin's surface.

As the exfoliation process uses only water, it is suitable for a wider range of skin types including dry or sensitive skin. Further the tool of the invention may be easily used by a user to enhance the appearance of the skin.

#### **Brief Description of the Drawings**

Reference will now be made to the accompanying drawings which illustrate preferred embodiments of the invention and wherein :-

Fig. 1 is an isometric view of the skin contacting element of an exfoliation tool according to an embodiment of the invention;

Fig. 2 is an exploded view of the tool according to an embodiment of the invention incorporating the skin contacting element of Fig. 1;

Fig. 3 is an isometric view looking at one face of the exfoliation tool;

Figs. 4 and 4A are enlarged views of different embodiments of the skin contacting element adjacent the skin contacting end in the region A of Fig. 3;

Fig. 5 illustrates the typical manner in which the exfoliation tool is used; and

Figs. 6 and 7 illustrate in isometric and end views an alternative exfoliation tool according to another embodiment of the invention.

#### **Detailed Description of the Preferred Embodiment**

Referring to the drawings and firstly to Fig. 1, there is illustrated a skin contacting element 10 for use in an exfoliation tool 11 (shown in Figs. 2 and 3)

according to an embodiment of the invention, the element 10 comprising a thin planar member 11 having opposite parallel side faces 12 and a convexly curved outer end 13. A series of spaced apart apertures or holes 14 are provided in the element 10, the apertures or holes lying along a centreline substantially parallel to the outer edge 13. The apertures or holes 14 are typically of a diameter of 3mm.

The tool 11 as shown in Figs. 2 and 3 includes a main body 15 in which the skin contacting element 10 is set, the body 15 being of a generally curvilinear isosceles triangular configuration in side view. The body 15 has opposite equal sides 16 and 17 and a third side 18 at which the element 10 is located. Each side 16, 17 and 18 is convexly curved with the equal sides 16 and 17 which have substantially the same constant radius along their length meeting at a pointed corner 19. The third side 18 has a radius greater than the radius of the sides 16 and 17 along its length other than at its opposite ends where the third side 18 meets the equal sides 16 and 17 through convexly curved corners 20.

The body 15 has a maximum thickness which enables it to be easily received in and gripped by the hand. Typically the body 15 has a maximum thickness dimension of between 10 and 20 mm and preferably between approximately 11 mm and 15mm. The body 15 additionally is provided in its opposite faces 21 with generally oval shaped cavities 22, the cavities 22 being arranged generally centrally of the faces 21 and extending generally parallel to the side 18 of the body 15 and extending symmetrically to opposite sides of a centreline X-X of the body 15. The cavities 22 are concavely curved in cross section and act as locating recess for the fingers and thumb of the hand for gripping the opposite faces of the body 15 to form the body 15 into a handgrip.

The element 10 has its outer operative end 13 of a curvature of radius substantially the same as the radius of curvature of the body side 18. The tool 11 is manufactured by injection moulding with the element 10 comprising an insert about which the body 15 of the tool is moulded. The spaced holes or apertures 14 create a maximum bond between the element 10 and body 15 to form the assembled tool as shown in Fig. 3 where the body 15 is moulded onto the element 10 whilst leaving the outer edge 13 exposed. The body 15 is injection moulded without locating pins to locate the element 10 in the body 15 to avoid locator pin holes which require backfilling with plastic material. This reduces the opportunity for build up of bacteria if such holes were present. This further minimize in use any build up of bacteria between the body 15 and

element 10 for improved hygiene. In addition, the spaced apertures 14 in the element 10 through which plastics flows during the moulding process ensures full bonding of the element 10 along the end 13 thereby providing support to the end 13.

The element 10 is formed by laser cutting a thin sheet of stainless steel which is typically of a thickness of between about 0.5 and 1.50 mm and the cutting process is controlled so as to form a plurality of regular striations or grooves and furrows 23 in the outer end 13 of the element 10 as shown in enlarged view in Fig. 4 which assists in the subsequent exfoliation process. The striations 23 as is apparent in Fig. 4 extend transversely across the end 13 of the element 10 and preferably normal to the faces 12 of the element 10. The intersection of the end 13 of the element with the opposite side faces 12 forms opposite blunt side edges 24.

The opposite faces 12 of the element at least adjacent to and along the outer end 13 of the element 10 are then mechanically polished to thus form a mirror or reflective finish in the faces 21.

When the element 10 is bonded with the body 15, the element 10 is sheathed on opposite sides and so that the end 13 of the element 10 is exposed and extends parallel to the side 18 of the body 15 substantially along the full length of the side 18 as shown in Fig. 3 with the end 13 curving at its opposite ends 25 to merge smoothly into the body 15.

In use, water is applied to the skin 26 to loosen the top layer of excess dead skin cells and debris and using comfortable pressure, the exfoliation tool 11 is oriented substantially at 90 degrees to the skin and the end 13 of the element 10 pressed against the skin as shown in Fig. 5. The exfoliation tool 11 is moved across the skin's surface as indicated by the arrow in Fig. 5 to accurately and efficiently clean the skin's surface. The action of applying pressure with the tool 11 massages the skin's surface and addition the removal of the water, excess dead skin cells and debris also smooths the skin's surface.

By moving the tool 11 over the skin in either direction, the squared off edges 24 of the end 13 of the element 10 will scrape excess dead skin cells or other materials which may block pores thereby reducing the possibility of grown hairs. The configuration of the end 13 will ensure that the skin is not damaged by the element 10 and will not cause irritation to the skin. This is also facilitated by the convex curvature of the end 13 of the element 11. Furthermore the striations 23 in the end 13 of the



element 10 substantially improve the exfoliation process as the individual striations function as a plurality of edges to scrape dead skin cells and other materials from the skin. This is important to the effectiveness of the end 13 since the plurality of edges defined by the striations are better able to take account of the naturally unevenness of the skin's surface.

The tool 11 may be of various sizes however it has been found that the tool is particularly effective where the outer end 13 of the element 10 of the tool 11 and thus the outer side 18 of the body 15 has a radius of between 60mm and 100mm. In particularly preferred embodiments, the end 13 has a radius of 62mm and 92 mm where the body 15 has a maximum width of 70mm and 90mm respectively between opposite corners 20. The body 15 however may have a reduced maximum width such as 50mm and the radius of the side 18 is correspondingly reduced. In the specific sizes referred to above, the maximum thickness of the body is typically between 10mm and 15mm and thus is about 15 to 20 % of the width.

The element 13 also has a preferred thickness of between 0.5mm and 1.00mm with a particularly preferred width being 0.55mm. The end 13 typically projects a distance of 1.0 mm to 3.00mm outwardly from the side 18 of the body 15 with the most preferred distance being 1.5mm.

Another embodiment of exfoliation tool 27 is shown in Figs. 6 and 7 and includes a main body 28 and a handle 29 which extends substantially transversely to the main plane of the body 28 in this case at right angles from the main body 28, the main body 28 being substantially of the same configuration as the body 15 of the tool 11 and include a skin contacting element 30 of the same configuration as the element 10 of Figs. 1 to 4. The tool 27 of Figs. 6 and 7 is thus in the general configuration of a conventional hand razor or shaver.

The tool 27 of the form shown in Figs. 6 and 7 is suitably for reaching normally inaccessible areas of the body such as the back or legs for more convenient operation by maintaining the skin contacting element 30 substantially at right angles to the skin for efficient operation. The tool 27 of Figs. 6 and 7 may be provided in different sizes as a larger tool and smaller tool for the following reasons:

1. for hygiene purposes so that there is a separate tool for the face and one for use on all other parts of the body;
2. the smaller tool is designed to facilitate exfoliation around the areas of the

1. nose and ears;
2. the larger tool is designed with a larger ellipse curve to the element 28 to facilitate exfoliation of the larger areas of the body.

The tools of the invention can help prevent all types of skin problems such as excess oiliness, dry or flaking skin, some blemishes, shaving rash or shaving stubble and ingrown hair irritation. It has been found that the skin after treatment is particularly clean and smooth and thus this makes the skin more readily suitable for the application and absorption of skin treatment products. In the case of use of the tool on a man's face, subsequent shaving procedures using blades or electric shavers will prove more effective because of the prior removal of excess dead skin cells, oils and debris to effectively smooth the skin in preparation for shaving. When used in conjunction with the application of water, dead skin cells and impurities are exfoliated away and not left on the pillow or bed which is particularly useful for people who suffer from breathing problems associated with dust mites.

Whilst the embodiments describe tools of particular configurations, it will be appreciated that the design thereof can considerably vary from that illustrated and described. The striations formed in the ends of the elements 10 or 30 are shown to be of a linear groove form extends at an angle of substantially 90 degrees to the faces 12 and edges 24 but may extend at other than 90 degrees to the edges or faces of the elements 10 or 30 as for example shown in Fig. 4A. The striations however may be in other configurations. The striations are typically of a depth of 0.05mm to 0.5 mm and the striations may be spaced apart a similar distance.

It should be noted that reference to the prior art herein is not to be taken as an acknowledgement that such prior art constitutes common general knowledge in the art.

The terms "comprising" or "comprises" as used throughout the specification and claims are taken to specify the presence of the stated features, integers and components referred to but not preclude the presence or addition of one or more other feature/s, integer/s, component/s or group thereof.

Whilst the above has been given by way of illustrative embodiment of the invention, all such variations and modifications thereto as would be apparent to persons skilled in the art are deemed to fall within the broad scope and ambit of the invention as defined in the appended claims.

**Claims**

1. A hand tool for exfoliation of the skin, said tool comprising a main body having a convexly curved first side, a thin planar element substantially within said body and having an exposed outer end for contact with the skin, said outer end being convexly curved along its length and being positioned outwardly of said convexly curved side of said body, and wherein a plurality of striations are provided in said end.
2. A hand tool as claimed in claim 1 wherein said thin planar element includes opposite side faces which lie in substantially parallel planes and intersect the end of the element to form opposite side edges defining the boundaries of the end of the element.
3. A hand tool as claimed in claim 2 wherein said striations are regularly spaced along the end of the element and extend transversely of the end between the opposite side edges.
4. A hand tool as claimed in claim 2 or claim 3 wherein said striations comprise a series of ridges and furrows or grooves which extend parallel to each other.
5. A hand tool as claimed in claim 4 wherein said striations extend substantially normal to the opposite faces of the element.
6. A hand tool as claimed in any one of claims 2 to 5 wherein at least one of the faces of the element has a mirror or reflective finish at least adjacent to the element end.
7. A hand tool as claimed in claim 6 wherein both faces of the element have a mirror or reflective finish.
8. A hand tool as claimed in any one of claims 2 to 7 wherein said opposite side faces of the planar member intersect the end of the planar member substantially normal thereto to define said opposite side edges of the end which are relatively blunt.
9. A hand tool as claimed in any one of claims 1 to 8 wherein said end is at a

substantially constant distance from the curved side of the body along substantially the full length of the curved side such that the end of the element is substantially parallel to the one side of the body.

10. A hand tool as claimed in any one of claims 1 to 9 wherein said element is formed of metal and wherein said end of the element is formed in a laser cutting process.

11. A hand tool as claimed in claim 10 wherein said striations are formed by the laser cutting process.

12. A hand tool as claimed in claim 7 wherein said mirror or reflective finish in the face or faces of the element is achieved by mechanical polishing.

13. A hand tool as claimed in any one of the preceding claims wherein said body is formed of a plastics material and is moulded about the skin contacting element.

14. A hand tool as claimed in claim 13 wherein said body is injection moulded about the element.

15. A hand tool as claimed in claim 14 wherein said element is provided with a series of apertures or openings through which the plastics material of the body passes during the injection moulding process, said openings or apertures being provided at spaced positions in the element and along a line substantially parallel to the ends.

16. A hand tool as claimed in any one of claims 1 to 15 wherein said body comprises a substantially curvilinear triangular body, the body having convexly curved outer sides, one side of which defines said convexly curved first side of the body and wherein said body is provided with a cavity on at least one face for locating the fingers or thumb of a user so that the body forms a handgrip

17. A hand tool as claimed in any one of claims 1 to 16 and including a handle extending from the body in a direction transversely of the plane of said body.

18. A method of manufacturing a hand tool for exfoliation of the skin, said method including the step of forming a thin planar metal element having convexly curved end and a plurality of striations in said end, and moulding a plastics body around said element whilst leaving said convexly curved end exposed for contact with the skin.

19. A method as claimed in claim 18 wherein said element is formed with a plurality of apertures or openings adjacent the convex curved end, and wherein said body is moulded to said element through said apertures or openings to bond said element to said body.

20. A hand tool for exfoliation of the skin comprising a thin planar element having an exposed outer end for contact with the skin and wherein a plurality of striations are provided in said end, said striations extending transversely of said end..

21. A method of exfoliation, said method including the steps of applying water to the skin and applying an end of a thin planar skin contacting element to the skin such that the element extends substantially at 90 degrees to the skin, said end being provided with a plurality of striations, and moving the skin contacting element over the skin to clean the skin's surface.

22. A method as claimed in claim 21 wherein said end of the element is convexly curved along its length and wherein the striations extend transversely of the end between opposite faces of the element.

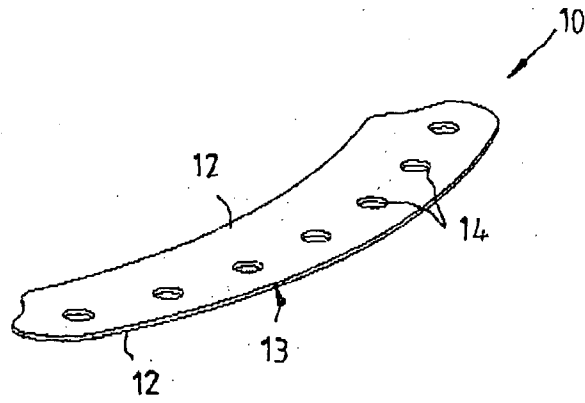


FIG. 1

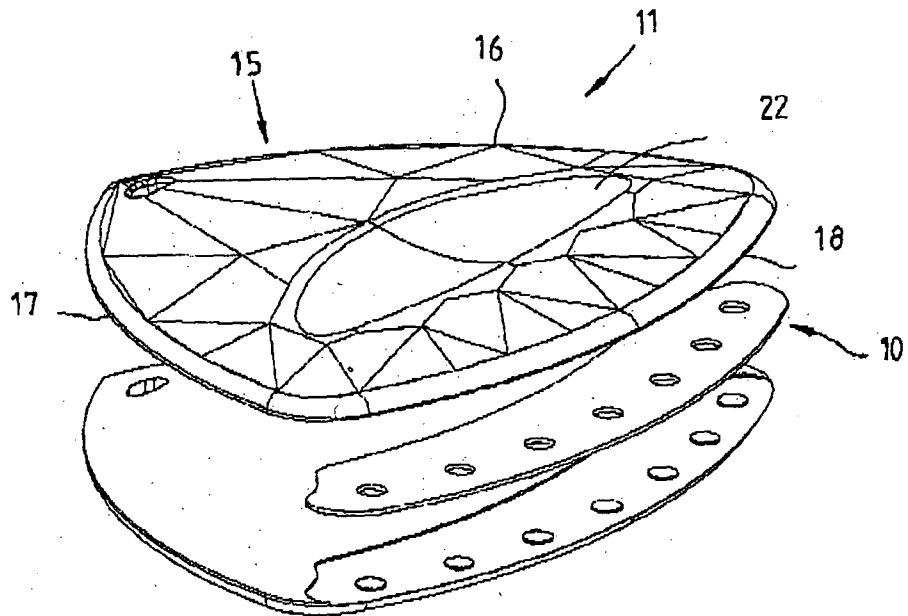
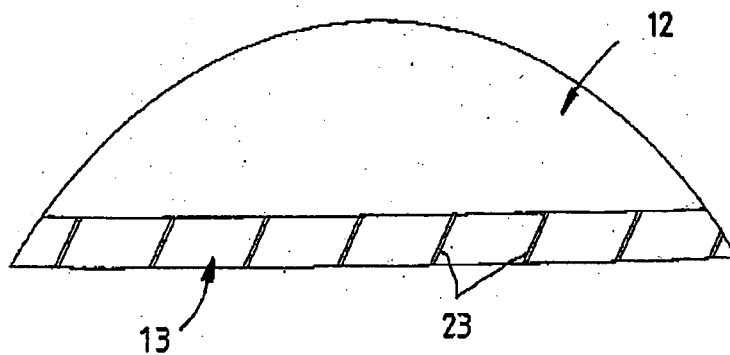
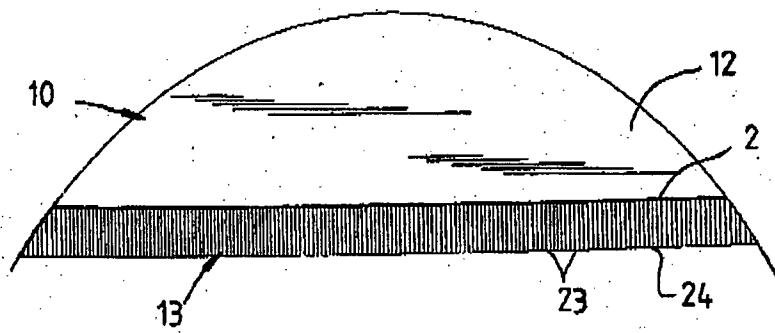
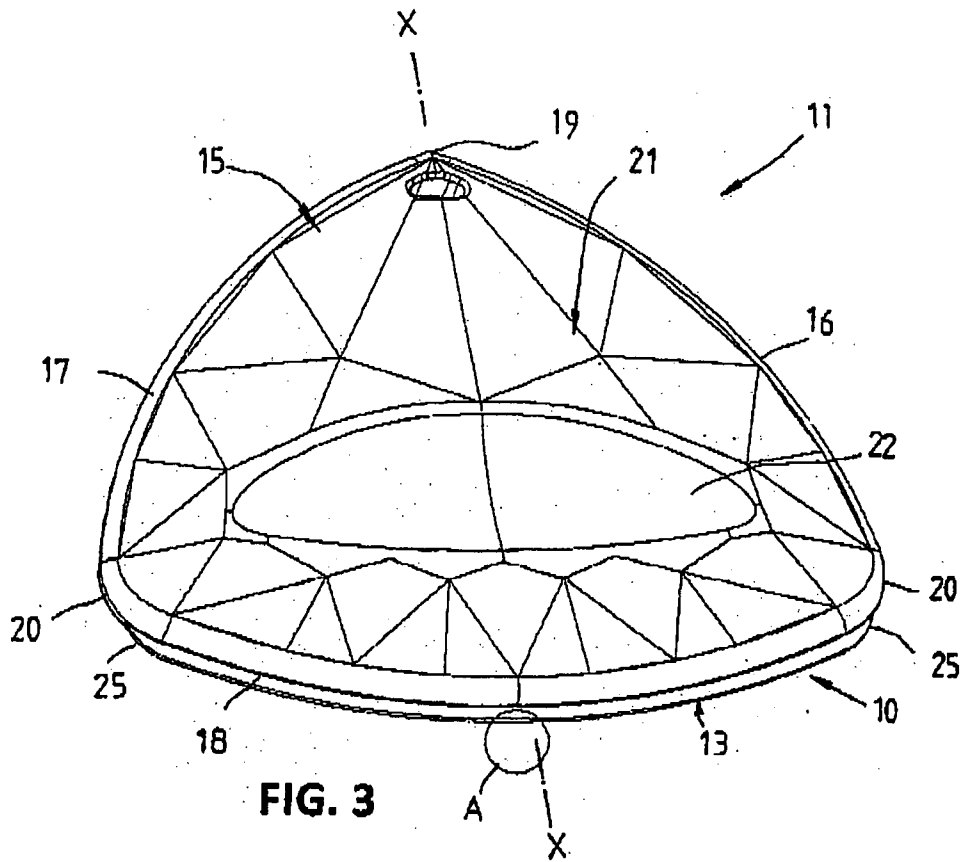


FIG. 2



INCORPORATED BY REFERENCE (RULE 20.6)

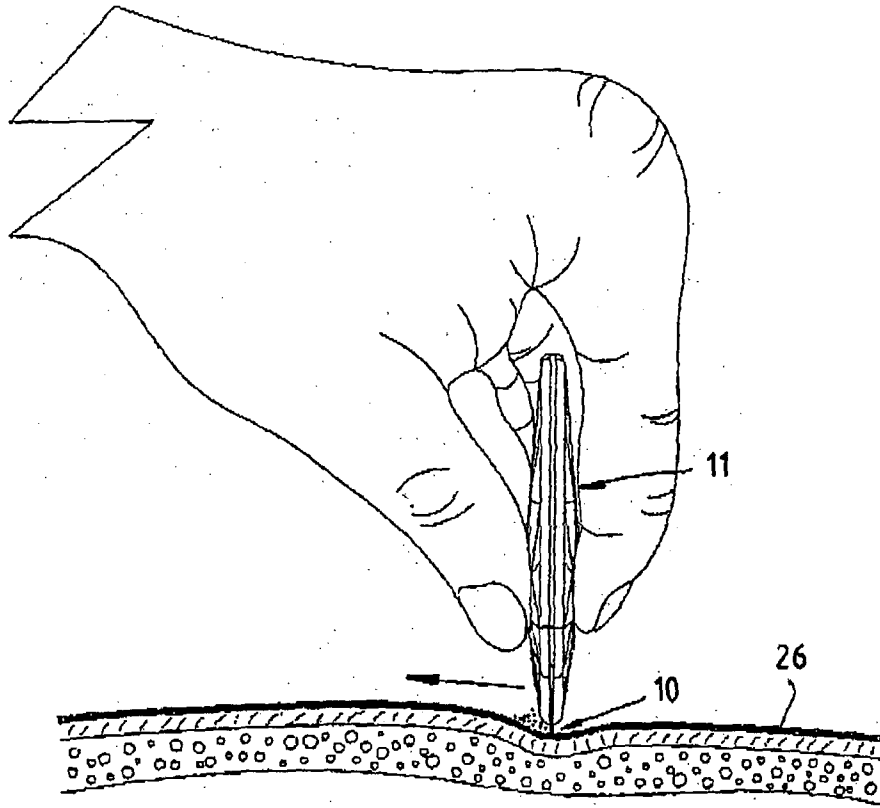


FIG. 5

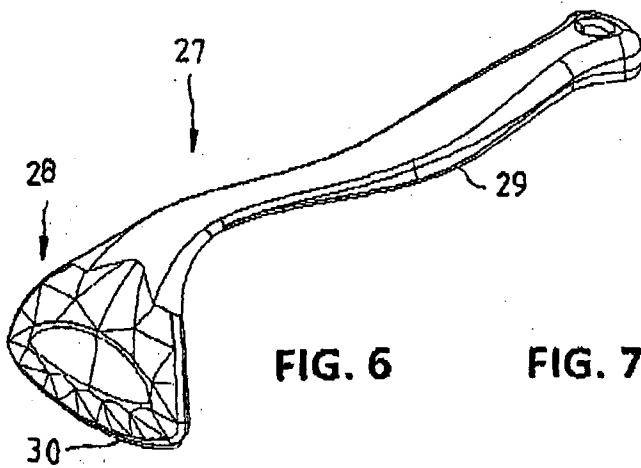


FIG. 6

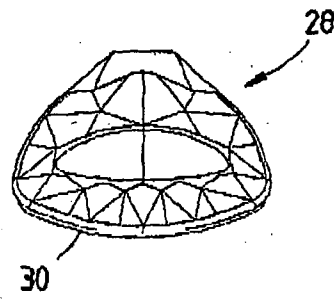


FIG. 7



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2010/000531

## A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

A61B 17/50 (2006.01)

A47K 7/02 (2006.01)

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)

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)

EPODOC, WPI; IPC &amp; ECLA A61B, A47K; key words SKIN, DEBRIS, CELL, TISSUE, EXFOLIATE, SCRAPE, DERMABRASION, SURFACE, CLEAN, BLADE, STRIATION, SERRATION, GROOVE, VALLEY, CHANNEL, FURROW, RIDGE &amp; like terms

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2355202 A (CALLADINE) 18 April 2001 Figures 1-10, abstract, page 4 line 32-page 5 line 11	20-22
X	US 6083235 A (WAGNER) 4 July 2000 Figures 2-4, column 4 line 62-column 5 line 3	20-22
X	US 6383202 B1 (ROSENBLOOD et al.) 7 May 2002 Figures 1 & 2, column 3 lines 37-49	20-22
A	WO 2007/137322 A1 (DURSO) 6 December 2007	

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

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"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

"E" earlier application or patent but published on or after the international filing date

"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

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"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

"O" document referring to an oral disclosure, use, exhibition or other means

"&amp;" document member of the same patent family

"P" document published prior to the international filing date but later than the priority date claimed

Date of the actual completion of the international search  
26 August 2010.

Date of mailing of the international search report

02 AUG 2010

Name and mailing address of the ISA/AU

AUSTRALIAN PATENT OFFICE  
PO BOX 200, WODEN ACT 2606, AUSTRALIA  
E-mail address: pct@ipaaustralia.gov.au  
Facsimile No. +61 2 6283 7999

Authorized officer

S. GLASSON

AUSTRALIAN PATENT OFFICE  
(ISO 9001 Quality Certified Service)  
Telephone No : +61 2 6283 2890

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2010/000531

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4438767 A (NELSON) 27 March 1984	
P, A	WO 2009/065184 A1 (HAZELWOOD) 28 May 2009	

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2010/000531

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
GB	2355202	AU	76759/00	GB	0001536	GB	0024822
		GB	9924214	WO	2001/26564		
US	6083235	US	6352545				
US	6383202	US	5868769	US	6428554	US	2001/004701
		US	6451038				
WO	2007/137322	EP	2066246	US	2009/177210		
US	4438767	NONE					
WO	2009/065184	NONE					

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX