Form 7
CONVENTION
Case 7862

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952-1969

DECLARATION IN SUPPORT OF A CONVENTION APPLICATION FOR A PATENT

In support of the Convention application made by THE GILLETTE COMPANY, a corporation organized under the laws of the State of Delaware, United States of America, of Prudential Tower Building, Boston, State of Massachusetts, United States of America

for a patent for an invention entitled: Shaving Device

I, Kathryn Estelle DeMoss
of 24 Colburn Drive, Sharon, Massachusetts 02067, United States of America
do solemnly and sincerely declare as follows:

1. I am the applicant for the patent.
(or, in the case of an application by a body corporate)
1. I am authorized by THE GILLETTE COMPANY

the applicant for the patent to make this declaration on its behalf.

2. The basic application as defined by Section 141 of the Act was made in the United States of America on the 2 day of September 1987, by Robert Anthony Trotta, Jeffrey Charles Cerier and Jill Marie Shurtleff

3. ~~I am / We are the actual inventor of the invention referred to in the basic application.~~
(or, where a person other than inventor is applicant)

3. Robert Anthony Trotta, Jeffrey Charles Cerier and Jill Marie Shurtleff, all citizens of the United States of America, respectively of 312 West Elm Street, Pembroke; 11 Orchard Street, Franklin; and 846 East 4th Street, South Boston; all in the State of Massachusetts, United States of America

are the actual inventors of the invention and the facts upon which the said Company is entitled to make the application are as follows: The Applicant Company is the assignee of the said invention from the actual inventors.

4. The basic application referred to in paragraph 2 of this Declaration was the first application made in a convention country in respect of the invention the subject of the application.

Declared at Boston, Massachusetts this 2nd day of February 1990

TO:
THE COMMISSIONER OF PATENTS
COMMONWEALTH OF AUSTRALIA.

X Kathryn Estelle DeMoss
(Full signature of Declarant-no initials)
Kathryn Estelle DeMoss - Secretary

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SHAVING DEVICE

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(56) Prior Art Documents
US 4483068
US 3040459

(57) Claim

1. A multidirectional shaving device having a plurality of razor blades, characterized in that each of said razor blades has a generally tubular upstanding wall of a predetermined height and defining a central aperture, said wall having an upper and lower end, an integrally formed inwardly facing flange on said upper end, said inwardly facing flange having a sharpened cutting edge, and an integrally formed outwardly facing flange on said lower end, in that said device further includes an elastomeric body member having a face surface and a bottom surface, said elastomeric member including a plurality of apertures, each of said razor blades being disposed in one of said apertures, said bottom surface of said elastomeric member including bearing surfaces disposed over and cooperating with said outwardly facing flanges of said razor blades, and in that a flexible sponge-like member is disposed under said bottom surface of said elastomeric

.../2

member and under said lower end of said razor blades, said sponge-like member including a plurality of rinse holes, each of said rinse holes being aligned with said central aperture of one of said razor blades, whereby each of said razor blades are capable of retracting vertically and angularly substantially independently of said other razor blades.

PCT

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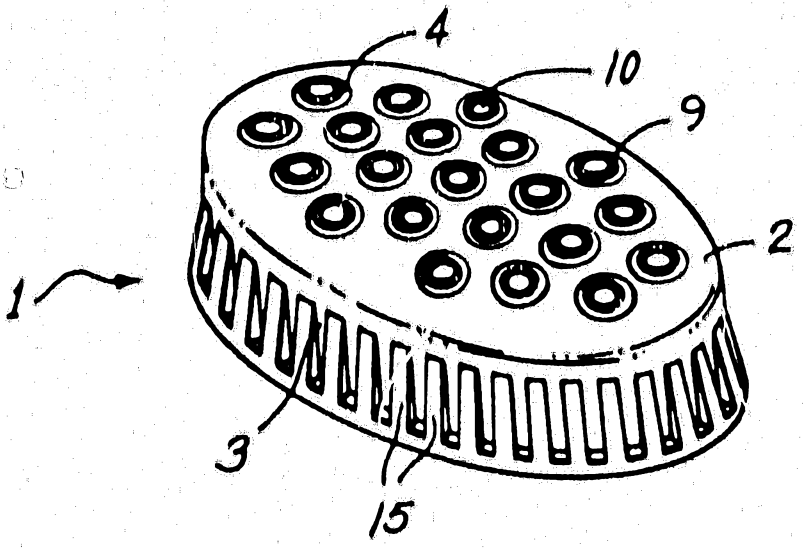


(57) Abstract

A plurality of individual thin-walled generally disk-shaped blades (4) are resiliently mounted in an elastomeric pad (1). The elastomeric pad, with its individually mounted blades, is disposed over a flexible sponge-like member (11). The shaving device is flexible and maintains maximum skin contact regardless of the contour of the area being shaved by providing that each individual blade is independently movable with respect to the other blades.

SHAVING DEVICE

This invention relates to a multi-directional shaver having a plurality of separate individual thin-walled blades.

More particularly, this invention relates to a flexible shaving device in which a plurality of small generally tubular blades are resiliently mounted on a face of an elastomeric member and above a foam insert for providing multidirectional shaving.

Wet or dry shaving devices having a single blade or foil formed with multiple cutting edges are known. Typical of such patents are U.S. Patent Nos. 4,483,068; 2,983,041; 2,989,804 and 2,614,321. Abrasive pad shavers to remove superfluous hair are also known, such as shown in U.S. Patent 2,040,599. Such prior art devices do not address the specific needs of female shaving to provide proper control of the shaving of legs and underarms in a comfortable, efficient manner.

Briefly stated, the problems associated with the prior art shavers, especially those relating to female shavers, have been solved by providing a flexible shaver comprising a plurality of small thin-walled, generally circular blades. The small generally tubular blades are independently movable. In a preferred embodiment, each blade is formed as a thin-walled cylinder with an inwardly facing flange on one end and an outwardly facing flange on the other end. The inwardly facing flange is sharpened to produce a continuous sharpend blade edge. The outwardly facing flange holds the blade in place in an aperture of an elastomeric member and preferably permits relative movement between the blade and the elastomeric member in response to shaving forces. A sponge-like member is disposed under the razor blades. The sponge-like member includes rinse holes aligned with the central aperture of each tubular razor blade. The elastomeric member is preferably generally eliptical in shape and, with the sponge-like member, provides for the resiliently mounting of the tubular blades to accomplish multidirectional efficient shaving.

According to the present invention there is provided a multidirectional shaving device having a plurality of razor blades, characterized in that each of said razor blades has a generally tubular upstanding wall of a predetermined height and defining a central aperture, said wall having an upper and lower end, an integrally formed inwardly facing flange on said upper end, said inwardly facing flange having a sharpened cutting edge, and an integrally formed outwardly facing flange on said lower end, in that said device further includes an elastomeric body member having a face surface and a bottom surface, said elastomeric member including a plurality of apertures, each of said razor blades being disposed in one of said apertures, said bottom surface of said elastomeric member including bearing surfaces disposed over and cooperating with said outwardly facing flanges of said razor blades, and in that a flexible sponge-like member is disposed under said bottom surface of said elastomeric member and under said lower end of said razor blades, said sponge-like member including a plurality of rinse holes, each of said rinse holes being aligned with said central aperture of one of said razor blades, whereby each of said razor blades are capable of retracting vertically and angularly substantially independently of said other razor blades.

A flexible multi—directional shaving device is provided which includes a plurality of small thin-walled blade units resiliently mounted on a face of an elastomeric member. The blade units are exposed on top of a foam insert which allows additional water to be utilized while shaving. Rinse holes are provided through the foam insert in alignment with the central aperture of the tubular blades.

The invention both as to its organization and principles of operation, together with further objects and advantages thereof, may better be understood by referring to the following detailed description of embodiments of the invention taken in conjunction with the accompanying drawings in which:

Fig. 1 is a perspective view of an embodiment of a pad shaver, in accordance with this invention;

Fig. 2 is a perspective view of a first embodiment of a razor blade, in accordance with this invention;

Fig. 3 is a perspective view, partial in section, of a pad shaver, in accordance with this invention;

Fig. 4 is a second embodiment of a razor blade, in accordance with this invention;

Fig. 5 is a further embodiment of a pad shaver blade, in accordance with this invention; and

Fig. 6 is a further embodiment of a pad shaver utilizing the razor blade of Fig. 5, in accordance with this invention.

Referring to Fig. 1, the present invention is directed toward a shaving device or pad shaver 1 having a generally eliptical shape. The major axis of the eliptical pad provides a wide surface for efficient

shaving of large areas, such as legs, while the smaller axis provides a narrower surface to facilitate the shaving of concave areas, such as around knees and ankles, and underarms. The narrow ends of the eliptical pad shaver 1 also contribute to good control and access for underarm shaving. While the eliptical shape is preferable with respect to female shaving, the invention is applicable to other shaped shaving devices.

The pad shaver 1 is preferably used with well known shaving preparations such as shaving creams or gels. Pad shaver 1 may also readily be used in the shower or tub. The pad shaver 1 floats, and due to the unique blades, may be safely manipulated by the shaver.

The outer surface or body of the pad shaver 1 is preferably made up of an integrally molded member forming a generally convex top face portion 2 and wall portion 3. Both the top face portion 2 and the wall portion 3 are preferably made of an elastomeric material such as a thermoplastic rubber which can be readily injection molded. The body thus formed is rigid enough to maintain the distances between the centers of the associated blades and flexible enough to allow the blades to retract vertically and angularly with complete independence of one another. The top face portion 2 of the body could be smooth or textured as desired.

Disposed through apertures formed in the top face portion 2 of the body of the pad shaver 1 are individual razor blades, such as tubular blade 4. The tubular blade 4, best seen in Fig. 2, has an upstanding, thin-walled continuous cylinder portion or wall 5 with an integral inwardly facing flange 6 on an upper end of the wall 5, and an outwardly facing flange 7 on a lower end of the cylindrical wall 5. The inwardly facing flange 6 is sharpened at its edge to produce a blade edge such as circular blade edge 8. The edge 8 on inwardly facing

flange 6 may be formed in a variety of manners well known in the art. The edge 8 may be formed in the same or a different plane than the plane parallel to that of the flange 6 or to the top face portion 2 of the body of the pad shaver 1.

The manufacturing of the blade 4 may be accomplished in a variety of well known manners, such as starting with a flat stock razor blade steel, drawing the steel in a cup-like configuration to have an inwardly facing flange 6 and an outwardly facing flange 7 and then grinding and honing or the like to provide the cutting edge 8. It is also contemplated that the blade 4 could be formed starting with a tubular stock material. The outwardly facing flange 7 is used to hold the blade 4 in place when the blade 4 is positioned through the aperture formed in the top face portion 2 of the body of the pad shaver 1. Each tubular razor blade 4 defines a central through-flow aperture 9.

The specific shape of the tubular blade associated with the practice of this invention may vary. That is, the razor blade need not be cylindrical or disk-shaped. Many other blade shapes are possible as well as the utilization of concentric tandem blade edges in each blade unit. Additional shaving members utilizing the tubular blade concept are disclosed in copending application No. 092,021

Disposed in the aperture 9 of each blade 4 is a concentrically located guard member 10, which will be described in greater detail when referring to Fig. 4. The guard member 10 is preferably formed as a small molded plastic part which is located concentrically in the pad shaver blade 4. The guard member 10 prevents excessive skin bulge from entering the aperture 9 of blade 4, thus preventing nicks and cuts while allowing hair to be cut.

In the embodiment of Fig. 1, twenty-one blades are illustrated. Each blade 4 is disposed in a respective aperture in the top face portion 2 of the body of the pad shaver 1. The apertures formed in the top face portion 2 of the body of the pad shaver 1 are preferably molded through the top face portion 2 to provide the mounting of the razor blades. The outer diameter of the outwardly facing flange 7 is greater than the diameter of its respective molded aperture formed in the top face portion 2 of the pad shaver 1 to provide a convenient mounting for the razor blade 4. The high number of razor blades 4 provide more usable blade edge than in more conventional razors. Thus, a close shave is quickly achieved. The body of the pad shaver 1 is rigid enough to maintain the distances between the centers of the blades 4. However, it is flexible enough to allow the blades 4 to retract vertically and angularly with complete independence of one another. Thus, in operation, each razor blade 4 is free to move in a downward direction in response to shaving forces with respect to the top surface of the top face portion 2.

Referring to Fig. 3, disposed inside the body of the pad shaver made up of top face portion 2 and integrally molded wall portion 3 and disposed under the lower end of outwardly facing flange 7 of blade 4, is a flexible sponge-like member 11. The sponge-like member 11 is preferably die cut, stamped, or molded out of an open cell foam material such as a flexible polyurethane. An upper surface 12 of the sponge-like member 11 holds the blades 4 in place in the body of the pad shaver 1. In addition, the upper surface 12 of the sponge-like member 11 cooperates with the underside of the outwardly facing flange 7 of each blade 4 to allow each blade 4 to retract slightly when shaving forces are applied in order to maintain safe shaving with higher shaving forces.

Disposed through the sponge-like member 11 are a plurality of rinse holes such as rinse hole 13, which allow hair and other debris to be readily rinsed. Preferably, a rinse hole 13 will be formed under the central aperture 9 of each blade unit 4 and be disposed completely through the sponge-like member 11. When the integrally molded wall portion 3 is squeezed by the shaver, the top face portion 2 of the pad shaver 1 is readily deformed into a more convex shape. Such a deformation is helpful in shaving smaller concave areas of the body.

To increase integrity of the sponge-like member 11 or to provide a more stable base for the blades 4, a separate backing member (not shown) made of a thin elastomeric material may be placed between the upper surface 12 of the sponge-like member 11 and the bottom of the top face portion 2 of the body of the pad shaver. The backing member would be shaped to conform to the shape of the top face portion 2 and include a plurality of apertures. Each aperture would be axially aligned with a through-flow aperture 9 of each tubular razor blade 4. The aperture of the holding member would also be in axial alignment with each of the rinse holes 13 of the sponge-like member 11.

The sponge-like member 11 also provides some rigidity to the shaving pad 1 and thus facilitates the holding of the pad 1 by the person using it. Further, since the shaving pad 1 of the instant invention is primarily designed to be used as the razor in a wet shaving process, the sponge-like member 11 would allow additional water to be utilized while shaving. If the wet sponge-like member 11 is pressed with a finger or fingers, such as on the bottom of the pad shaver 1, or if the sides of the pad 1 are squeezed together, water expelled by the sponge-like member 11 will exit through the central

apertures 9 located in the blades 4, thus introducing more water to the area being shaved. When the integrally molded wall portion 3 is squeezed by the shaver, the top face portion 2 of the pad shaver 1 is readily deformed into a more convex shape. Such a deformation is helpful in shaving smaller concave areas of the body.

To increase the integrity of the sponge-like member 11 or to provide a more stable base for the blades, a separate backing member (not shown) made of a thin elastomeric material may be placed between the upper surface 12 of the sponge-like member 11 and the bottom of the top face portion 2 of the body of the pad shaver. The backing member would be shaped to conform to the shape of the top face portion 2 and include a plurality of apertures. Each aperture would be axially aligned with a through-flow aperture 9 of each tubular razor blade 4. The apertures of the backing member would also be in axial alignment with each of the rinse holes 13 of the sponge-like member 11.

A retaining ring 14 integrally formed on the lower edge of the wall portion 3 of the body of the pad shaver 1 may be utilized to hold the sponge-like member 11 securely in place as well as to stiffen side portion 16 of the sponge-like member 11. The retaining ring 14 may alternatively be formed of a rigid molded plastic and fit into a mating groove of wall portion 3 of the body of pad shaver 1. The retaining ring 14 not only holds the sponge-like member 11 securely in place, but it also stiffens the bottom portion of the pad 1 to facilitate gripping. If desired, a special gripping surface, such as vertical gripping ridges 15, may readily be integrally formed on the outer surface of wall portion 3 of the body of the pad shaver 1.

It is also within the scope of this invention to form the body of the pad shaver 1 and the sponge-like member 11 as a single-molded part made of open or closed cell foam or as an elastomer. The retaining ring 14 could

also be molded as part of the body by insert molding or by increasing the thickness of the side of the body near the bottom of side portion 3.

Referring now to Fig. 4, a razor blade 17 is shown which is similar to blade 4. The blade 17 is shown in section to illustrate a guard member 18. The guard member 18 may be formed as a small molded plastic part trapped, such as press fit, into the central aperture of the blade 17. As an alternative, the guard member 18 could be freely floating within the central aperture of blade 17. That is, the guard member 18 could be designed to move vertically relative to the blade 17.

The guard member 18 includes a central face-engaging portion 19 integrally connected through arms, such as arm 20, to a concentric ring 21. A plurality of rinse slots, such as slot 22, are formed between the face-engaging portion 19, arms 20, and ring 21 to provide good rinsability. The guard member 18 may be also molded entirely, or in part, through a technique such as two-color molding, to include a water-leachable material such as polyethylene oxide, well known in the art.

Referring to Fig. 5, an alternative blade shape is shown in which a tubular blade 23 is more elongated than the generally circular blades previously described. Blade 23 includes an upstanding wall portion 24 as well as an outwardly facing flange 25 and an inwardly facing flange 26, which includes a continuous cutting edge 27 thereby defining a central aperture 28.

The pad shaver 29 of Fig. 6 illustrates a generally eliptical shaped shaving device having a plurality of blades such as blades 29 of Fig. 5 disposed therein. It is also within the scope of this invention that many other patterns of blade placement on the top face of the pad shaver exist. Several independent blades 4 of different shapes, with or without guards, may also be intermixed.

C L A I M S

1. A multidirectional shaving device having a plurality of razor blades, characterized in that each of said razor blades has a generally tubular upstanding wall of a predetermined height and defining a central aperture, said wall having an upper and lower end, an integrally formed inwardly facing flange on said upper end, said inwardly facing flange having a sharpened cutting edge, and an integrally formed outwardly facing flange on said lower end, in that said device further includes an elastomeric body member having a face surface and a bottom surface, said elastomeric member including a plurality of apertures, each of said razor blades being disposed in one of said apertures, said bottom surface of said elastomeric member including bearing surfaces disposed over and cooperating with said outwardly facing flanges of said razor blades, and in that a flexible sponge-like member is disposed under said bottom surface of said elastomeric member and under said lower end of said razor blades, said sponge-like member including a plurality of rinse holes, each of said rinse holes being aligned with said central aperture of one of said razor blades, whereby each of said razor blades are capable of retracting vertically and angularly substantially independently of said other razor blades.

2. A shaving device according to claim 1, characterized in that said elastomeric member has a predetermined thickness less than the height of said upstanding wall of each of said razor blades.

3. A shaving device according to claim 2, characterized in that said elastomeric member is flexible and generally elliptical in shape.

4. A shaving device according to claim 3, characterized in that said sponge-like member includes a side portion and is generally elliptical in shape, in that said body includes a wall portion integrally molded with said elastomeric member, said wall portion being disposed over said side portion of said sponge-like member for providing a gripping surface, and

in that said wall portion of said body includes an integrally formed retaining ring for holding said sponge-like member in place.

5. A shaving device according to claim 4, characterized in that said face surface of said body is generally convex in shape, and in that the squeezing of said wall portion disposed over said side portion of said sponge-like member deforms said face surface of said body to a more convex shape.

6. A shaving device according to claim 4, further characterized by a plurality of guard members, one of said guard members being disposed in said central aperture of each of said razor blades.

7. A shaving device according to claim 6, characterized in that each of said guard members includes a plurality of rinse slots.

8. A shaving device according to claim 6, characterized in that each of said guard members includes a water-leachable shaving aid.

9. A shaving device according to claim 1, characterized in that said upstanding wall of each of said razor blades is formed as a thin-walled cylinder.

10. A shaving device according to claim 1, characterized in that said upstanding wall of each of said razor blades is formed as a continuous thin-walled elongated member.

FIG. 1

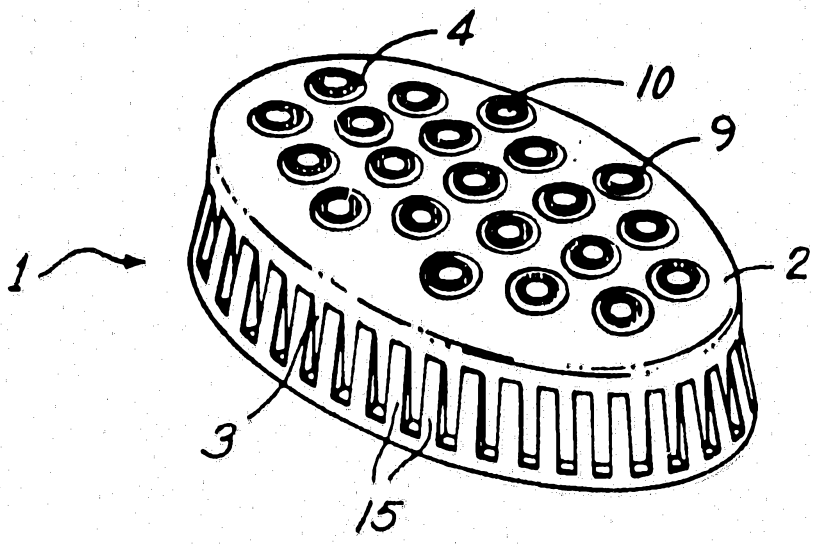


FIG. 2

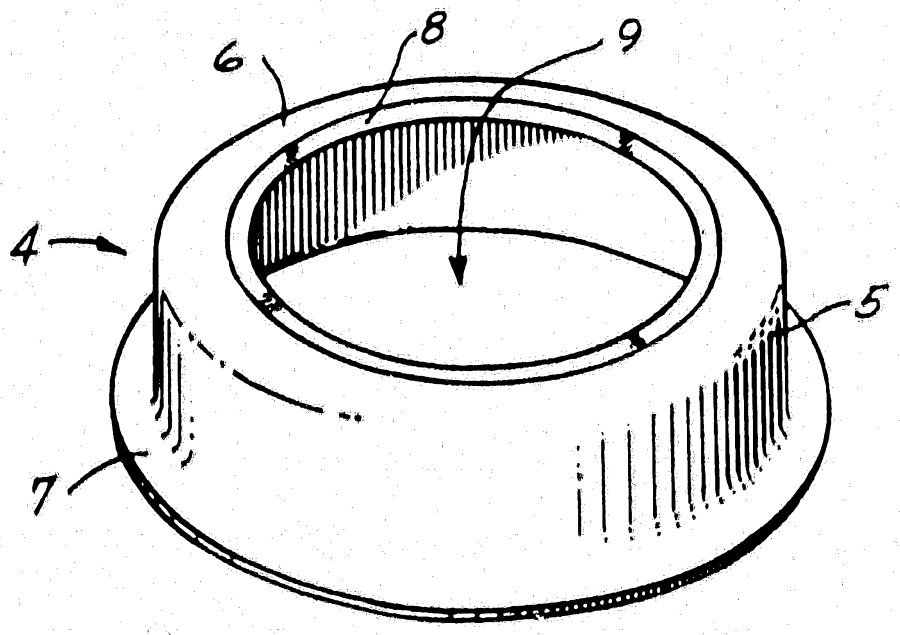


FIG. 3

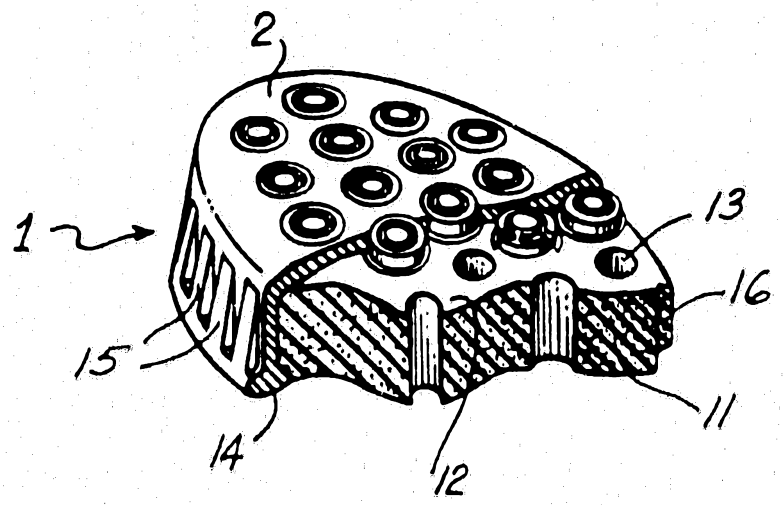


FIG. 4

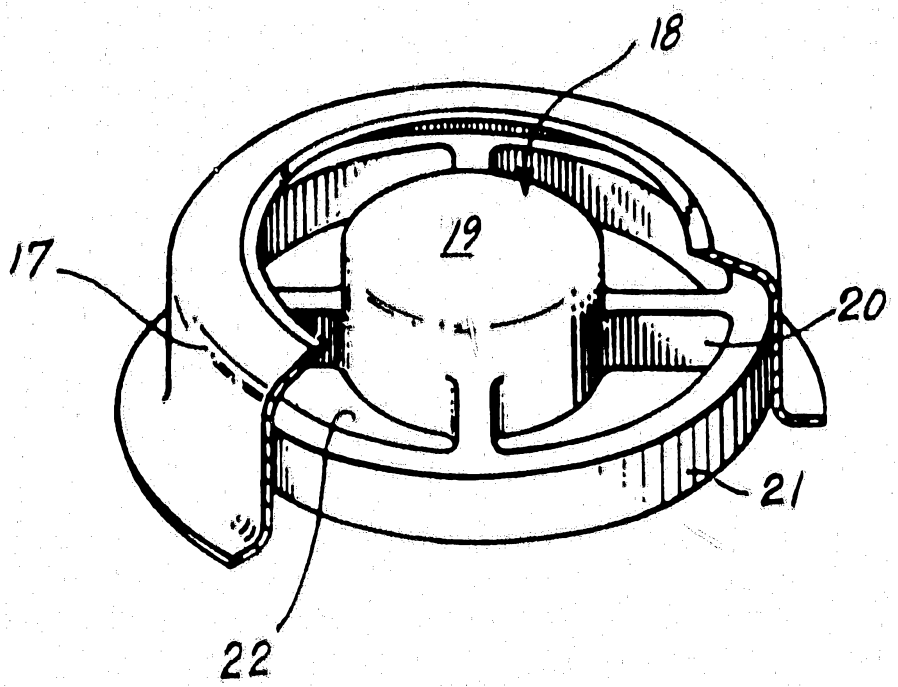


FIG. 5

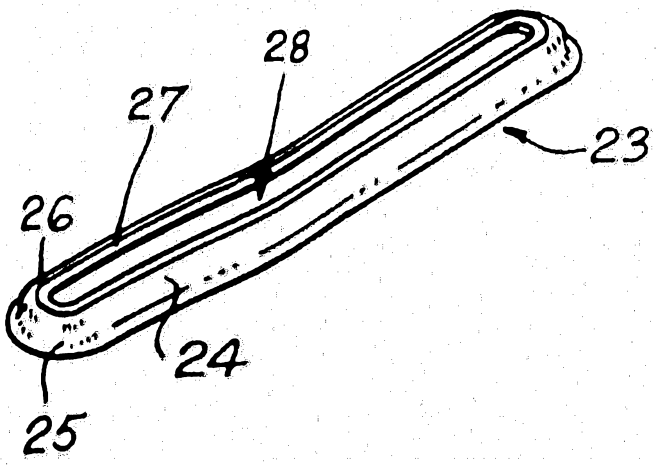
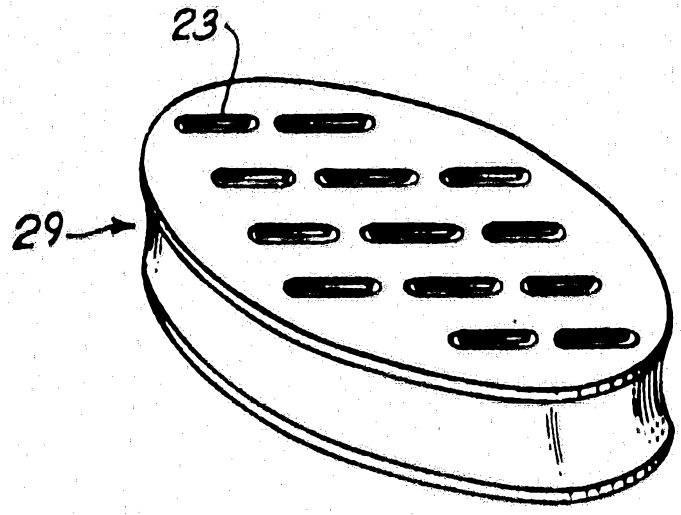


FIG. 6



INTERNATIONAL SEARCH REPORT

International Application No. PCT/US88/02849

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC (4): B26B 21/00
U.S. Cl. 30/49

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
U.S.	30/32,34R,41,42,49,50,346.5

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched [8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT [9]

Category [10]	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
A	US, A, 2,598,711 (Musso) Published 03 June 1952.	
A	US, A, 2,614,321 (Ackerman) Published 21 October 1952.	
A	US, A, 2,632,242 (Musso) Published 24 March 1953.	
A	US, A, 3,465,436 (Musso) Published 09 September 1969.	
A	US, A, 3,702,026 (Scholin) Published 07 November 1972.	
A	US, A, 4,302,876 (Emmett) Pulished 01 December 1981.	
A	US, A, 4,483,068 (Clifford) Published 20 November 1984.	
A,P	US, A, 4,720,917 (Solow) Published 26 January 1988.	

[10] Special categories of cited documents: [14]

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

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

"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)

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

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

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
03 NOVEMBER 1988	06 JAN 1989
International Searching Authority	**Signature of Authorized Officer**
ISA/US	Michael Folkerts MICHAEL FOLKERTS