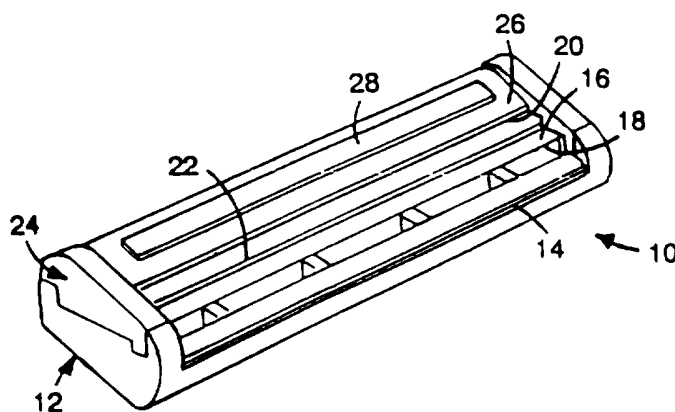




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>5</sup> : <b>B26B 21/54, 21/40</b></p>	<p><b>A3</b></p>	<p>(11) International Publication Number: <b>WO 92/19425</b> (43) International Publication Date: 12 November 1992 (12.11.92)</p>
<p>(21) International Application Number: PCT/US92/03330 (22) International Filing Date: 22 April 1992 (22.04.92) (30) Priority data: 692,010 26 April 1991 (26.04.91) US 759,812 26 August 1991 (26.08.91) US 835,251 13 February 1992 (13.02.92) US (71) Applicant: THE GILLETTE COMPANY [US/US]; Prudential Tower Building, Boston, MA 02199 (US). (72) Inventors: GREWEL, Manohar, S. ; 114 Larchmont Lane, Hanover, MA 02339 (US). CHOU, Chong-Ping, P. ; 8 Carol Lane, Lexington, MA 02173 (US). HAHN, Steve, S. ; 7 Trinity Ct., Wellesley Hills, MA 02181 (US). MADEIRA, John ; 5 Amanda Road, Assonet, MA 02702 (US).</p>		<p>(74) Agents: GALLOWAY, Peter, D. et al.; Ladas &amp; Parry, 26 West 61 Street, New York, NY 10023 (US). (81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CI (OAPI patent), CM (OAPI patent), CS, DE, DE (European patent), DK, DK (European patent), ES, ES (European patent), FI, FR (European patent), GA (OAPI patent), GB, GB (European patent), GN (OAPI patent), GR (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC (European patent), MG, ML (OAPI patent), MN, MR (OAPI patent), MW, NL, NL (European patent), NO, PL, RO, RU, SD, SE, SE (European patent), SN (OAPI patent), TD (OAPI patent), TG (OAPI patent). <b>Published</b> <i>With international search report.</i> (88) Date of publication of the international search report: 21 January 1993 (21.01.93)</p>

(54) Title: IMPROVEMENTS IN OR RELATING TO RAZOR BLADES



(57) Abstract

A razor blade includes a substrate with a wedge-shaped edge, an interlayer of material selected from the group consisting of nickel, niobium, silicon, silicon carbide, tantalum, vanadium, and alloys of such materials on the tip and flanks of the wedge-shaped edge, the thickness of the interlayer preferably being in the range of about 50-500 angstroms, and a layer of diamond or diamond-like carbon material on the interlayer that preferably has a thickness of about two thousand angstroms and that defines a tip radius of less than about 1000 angstroms.

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

<b>AT</b>	Austria	<b>FI</b>	Finland	<b>MI</b>	Mali
<b>AU</b>	Australia	<b>FR</b>	France	<b>MN</b>	Mongolia
<b>BB</b>	Barbados	<b>GA</b>	Gabon	<b>MR</b>	Mauritania
<b>BE</b>	Belgium	<b>GB</b>	United Kingdom	<b>MW</b>	Malawi
<b>BF</b>	Burkina Faso	<b>GN</b>	Guinea	<b>NI</b>	Netherlands
<b>BG</b>	Bulgaria	<b>GR</b>	Greece	<b>NO</b>	Norway
<b>BJ</b>	Benin	<b>HU</b>	Hungary	<b>PL</b>	Poland
<b>BR</b>	Brazil	<b>IE</b>	Ireland	<b>RO</b>	Romania
<b>CA</b>	Canada	<b>IT</b>	Italy	<b>RU</b>	Russian Federation
<b>CF</b>	Central African Republic	<b>JP</b>	Japan	<b>SD</b>	Sudan
<b>CG</b>	Congo	<b>KP</b>	Democratic People's Republic of Korea	<b>SE</b>	Sweden
<b>CH</b>	Switzerland	<b>KR</b>	Republic of Korea	<b>SN</b>	Senegal
<b>CI</b>	Côte d'Ivoire	<b>LI</b>	Liechtenstein	<b>SU</b>	Soviet Union
<b>CM</b>	Cameroon	<b>LK</b>	Sri Lanka	<b>TD</b>	Chad
<b>CS</b>	Czechoslovakia	<b>LU</b>	Luxembourg	<b>TG</b>	Togo
<b>DE</b>	Germany	<b>MC</b>	Monaco	<b>US</b>	United States of America
<b>DK</b>	Denmark	<b>MG</b>	Madagascar		
<b>ES</b>	Spain				

INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US92/03330

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC(5) :B26B,21/54, B26B, 21/40  
 US CL :30/346,55, 30/346.53  
 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)  
 U.S. : 204/192.1

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
 NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 NONE

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US,A, 3761374 (BROWE), 25 SEPTEMBER 1973 see entire ref.	1-3
Y	US,A, 3802078 (DENES), 09 APRIL 1974 see entire ref.	1-3
Y	US,A, 3349488 (CRAIG), 31 OCTOBER 1967	1-3
A	US,A, 3480483 (WILKINSON), 25 NOVEMBER 1969	5
A	US,A, 4291463 (WILLIAMS), 29 SEPTEMBER 1981	7

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

* Special categories of cited documents:	*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
*A* document defining the general state of the art which is not considered to be part of particular relevance	*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
*E* earlier document published on or after the international filing date	*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
*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)	*G*	document member of the same patent family
*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		

Date of the actual completion of the international search 09 SEPTEMBER 1992	Date of mailing of the international search report 09-11
Name and mailing address of the ISA/ Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. NOT APPLICABLE	Authorized officer <i>Debbie Walker</i> HEYRAMNA, PAUL Telephone No. (703) 308-2767

INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US92/03330

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

- 1.  Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
  
- 2.  Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
  
- 3.  Claims Nos.: 4,5,6,7,8,9,10  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

- 1.  As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
- 2.  As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
- 3.  As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
  
- 4.  No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest  The additional search fees were accompanied by the applicant's protest.  
 No protest accompanied the payment of additional search fees.