



Industria y Comercio

SUPERINTENDENCIA

Delegatura de Propiedad Industrial

División de Nuevas Creaciones

PCT
SOLICITUD

PATENTE DE INVENCION

04-56823

21. EXPEDIENTE No.

54. TITULO

CEPILLO DE DIENTES.

51. CLASIFICACION INTERNACIONAL

A46B S/02

71. SOLICITANTE

JOHNSON & JOHNSON INDUSTRIAL LTDA.

DOMICILIO

SAO JOSE DOS CAMPOS, SP, BRASIL.

74. APODERADO

JIMENA ESCOBAR URIBE

22. BOGOTA, D.C.,

JUNIO 17, 2004

Industria y Comercio
SUPERINTENDENCIA

FORMULARIO ÚNICO DE SOLICITUD DE PATENTE
PCT
ENTRADA EN FASE NACIONAL

SOLICITUD DE:

☒ Patente de Invención ☐ Patente de Modelo de Utilidad

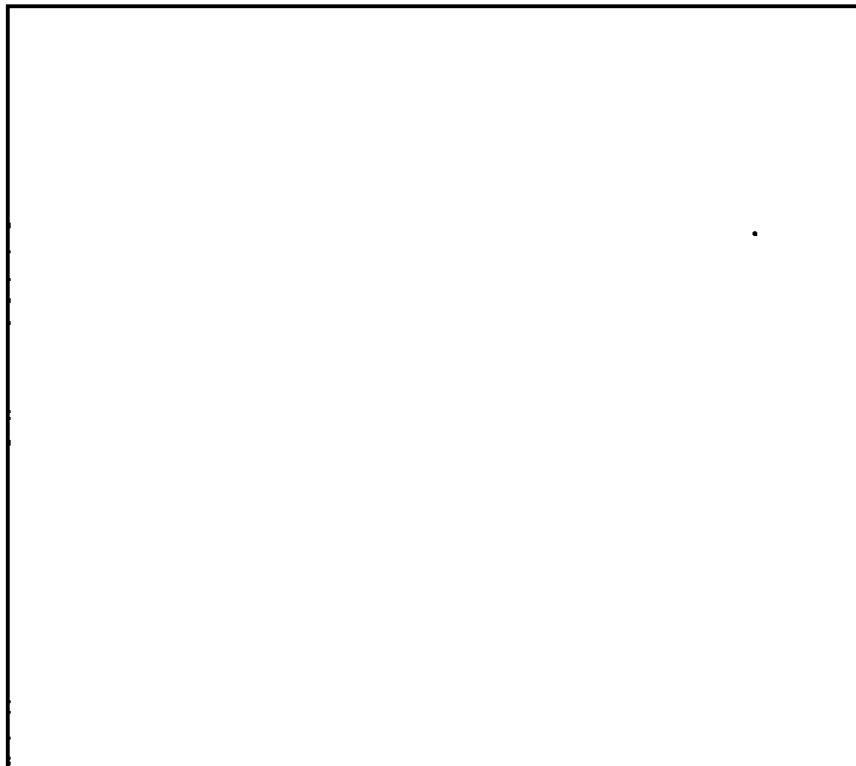
☐ Capítulo I. ☒ Capítulo II.

2 S LICITANTE (71)	Nombre: JOHNSON & JOHNSON INDUSTRIAL LTDA. Dirección: Rodovia Presidente Dutra, s/nº, Km 154, Nacionalidad o Domicilio: São José dos Campos, SP, Brasil. Lugar de Constitución : Brasil. Teléfono: Fax: E-mail:	IDENTIFICACIÓN C.C. ☐ NIT ☐ C.E. ☐ Otro ☐ Número
3 REPRESENTANTE O AP DERADO (74)	Nombre: JIMENA ESCOBAR URIBE Dirección: Cra. 11A No. 94-76 (Of. 305) Teléfono: 6 162051/61 Fax: 6 161889 E-mail: tm-patent@escobaruribe.com	IDENTIFICACIÓN C.C. ☒ NIT ☐ C.E. ☐ Otro ☐ Número 39.779.452 T.P.68.228
4 INVENTOR (ES) (72)	Nombre: VER ANEXOS Dirección: Nacionalidad o domicilio:	
5 PCT (86) Solicitud Internacional No. <u>PCT/BR02/00170</u> Fecha <u>Diciembre 4, 2002</u> Publicación Internacional No. <u>WO 03/047388 A1</u> Fecha <u>Junio 12, 2003</u>		
6 TITULO (54) <u>CEPILLO DE DIENTES.</u>		
7 Clasificación Internacional (51) <u>A46B 5/02</u>		
8 Prioridad SI ☒ NO ☐	(33) País de Origen <u>BRASIL</u> <u>BRASIL</u>	(32) Fecha <u>Diciembre 4, 2001</u> <u>Noviembre 25, 2002</u>
		(31) Número de Solicitud <u>PI 0106578.5</u> <u>PI 0205539-2</u>

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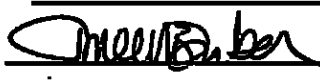
- ☐ Comprobante de pago de la tasa de presentación de la solicitud
- ☐ Documento que acredita la existencia y representación legal cuando el solicitante sea persona jurídica
- ☐ Poderes si fuere el caso
- ☐ Documento de cesión del inventor al solicitante o a su causante
- ☐ Declaraciones
- ☐ Copia de la solicitud internacional. (Resumen, descripción, reivindicaciones, dibujos)
- ☐ Traducción de la solicitud internacional al castellano. (Resumen, descripción, reivindicaciones, dibujos)
- ☐ Copia del examen preliminar internacional efectuado por la Autoridad Internacional de Examen Preliminar (IPEA).
- ☐ Traducción del examen preliminar internacional efectuado por la IPEA
- ☐ De ser el caso copia de contrato de acceso.
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas
- ☐ De ser el caso, certificado de depósito del material biológico
- ☐ Arte final 12 X 12 .
- ☐ De ser el caso, información sobre otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su causante, relacionadas parcial o totalmente con la invención de esta solicitud.
- ☐ De ser el caso, modificaciones efectuadas a la solicitud internacional
- ☐ Otros

11 FIGURA CARACTERÍSTICA



12 S licto la concesión de la patente

NOMBRE: JIMENA ESCOBAR URIBE

FIRMA: 

C.C. 39.779.452 de Usaquén T.P. 68.228

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SUPERINDUSTRIA Y COMERCIO
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NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 04 - 33,948
FECHA : ABRIL 28 DE 2004

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
ESCOBAR URIBE ASOCIADOS	CONSIGNACION	BANCO POPULAR	050-00110-6	4992970	27/04/2004	8,251,000.00

***** CONCEPTO *****

CANT. CONTABILITICO	CONCEPTO	TOTAL CONCEPTO
1 50005-01-01 SOLICITUDES	1 TRAMITES DE SOL. DE PATENTE DE IN	422,000.00
	TOTAL :	422,000.00

SON: CUATROCIENTOS VEINTIDOS MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

ANEXOS

INVENTORES

- 1.) **ORIANI, Paulo César de Godoy**
(Rua João Thomazine, 165, CEP-13253-450 - Itatiba - SP, Brasil);
- 2.) **DITLEF, Arnaldo Antonio**
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- 3.) **SIMIONATO, Luiz Bellino**
(Rua Esperança 227/801, CEP-12243-700 - São José dos Campos - SP, Brasil);
- 4.) **FALLEIROS, Alexandre Petrocini**
(Rua Oscar Coelho Laurino, 171, CEP-12244-840 São José dos Campos - SP, Brasil);
- 5.) **MARSON NETO, Orlando**
(Rua Nazur, 82, CEP-12307-030 - Jacareí - SP, Brasil).

Solicito expresamente a nombre de la sociedad
JOHNSON & JOHNSON INDUSTRIAL LTDA,
sociedad constituida de conformidad con las leyes de
Brasil, domiciliada en Rodovia Presidente Dutra, s/nº,
Km 154, Sao José dos Campos, SP, Brasil, el
otorgamiento de Patente para la invención titulada
"CEPILLO DE DIENTES ".

Clase: A46B 5/02


JIMENA ESCOBAR URIBE
C.C. 39.779.452 de Usaquen.
T.P. 68.228

POWER OF ATTORNEY

The undersigned **JOHNSON & JOHNSON INDUSTRIAL LTDA.** acting on behalf of and representing

, a company organised and existing under the laws of Brazil domiciled at Rodovia Presidente Dutra, s/nº, KM 154, São José dos Campos, SP, Brazil

hereby appoints **JIMENA ESCOBAR-URIBE** and/or **IGNACIO ESCOBAR-URIBE** domiciled at Bogota, Colombia **CARRERA 11 A No. 94-76 OF. 305-306**

as our true and legal attorneys with the necessary powers: 1. to apply to the administrative, judicial and police authorities of the Republic of Colombia, in any instance or appeal, for obtaining registration of patents, utility models, industrial designs, commercial ensigns and names, trademarks, domain names, copyrights and neighbouring rights, plant varieties, health licenses as well as their assignments, extensions, renewals, changes of name and domicile; 2. to prepare, apply for, obtain, execute and register contracts, licenses, authorizations and registrations of any kind; 3. to intervene as plaintiffs or defendants, in any instance or appeal, before any judge, court, tribunal, corporation, public officer or authority in any judicial, administrative or police action, such as: actions dealing with commercial ensigns and names; oppositions against trademark registrations; caducity and nullity actions; recovery actions, actions arising from obtainment and working of license agreements; actions dealing with unfair competition; criminal actions; actions claiming indemnity for damages, complaints or remarks on all sort of industrial property matters; the performance of precautionary measures, and in any other similar action, measure or appeal related to industrial property matters; copyrights and neighbouring rights and obtentor of plant varieties' rights. To this effect, we hereby authorize them to file applications, make descriptions, amendments, protests, declarations, oppositions, cancellations, appeals and claims; to pay taxes, quotas and liens as provided by law; to waive or abandon granted rights or rights in process of being granted, to receive all kind of documents and securities; to issue the respective releases and, in general to take, before said authorities, pertinent steps to the above-mentioned purposes and take all measures they may deem advisable to protect our interests, with all other necessary legal faculties, and we hereby declare as good and valid whatever the attorneys should do to our benefit.

This power comprises the authority to ratify or confirm on our behalf any action, as well as the faculty of receiving, desisting, transacting, compromising, conciliating, substituting and revoking substitutions, taking notifications and appointing judicial and extra-judicial attorneys.

Signed at São Paulo, Brazil January 31, 2003

Jose Antonio Justino Filho and Ricardo Alves Bastos
President and Legal Director

DOCUMENTO DE PODER

El suscrito **JOHNSON & JOHNSON INDUSTRIAL LTDA.**

obrando en nombre y representación de

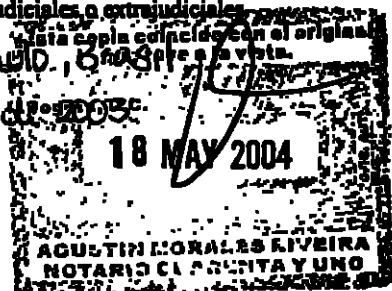
, una compañía organizada y existente bajo las leyes de Brasil con domicilio en Rodovia Presidente Dutra, s/nº, KM 154, São José dos Campos, SP, Brasil

nombra a **JIMENA ESCOBAR-URIBE** y/o **IGNACIO ESCOBAR-URIBE** domiciliados en Bogotá, Colombia **CARRERA 11 A No. 94-76 OF. 305-306**

apoderados verdaderos y legales con poder especial, amplio y suficiente: 1. para recabar de las oficinas y autoridades colombianas administrativas, judiciales y de policía en cualquier instancia o recurso, la obtención de patentes de invención, modelos de utilidad, diseños industriales, registro de marcas, nombres de dominio, registro de derechos de autor y derechos conexos, registro de variedades vegetales, depósito de nombres comerciales y enseñas, registros sanitarios, así como sus trasposos, prórrogas, renovaciones, cambios de nombre y de domicilio; 2. elaborar, tramitar, solicitar, obtener, realizar, ejecutar y registrar contratos, licencias, autorizaciones y registros de cualesquiera clase; 3. intervenir como demandante o como demandado en cualquier instancia y recurso, y ante cualquier juez, entidad, corporación, funcionario público o autoridad en acciones judiciales, administrativas y de policía, tales como acciones derivadas del nombre o enseña comerciales; observaciones u oposición al registro de marcas; acciones de caducidad y nulidad; acciones reivindicatorias; acciones derivadas de la obtención o explotación de licencias; acciones de competencia desleal; demandas penales y civiles; acciones de indemnización de perjuicios, reclamos u observaciones a cualquier asunto sobre propiedad industrial; el ejercicio de medidas cautelares y cualesquiera otras acciones, medidas o recursos similares relacionados con la propiedad industrial, los derechos de autor y derechos conexos y los derechos de obtentor de variedades vegetales. A este efecto, los facultamos para elevar solicitudes, formular descripciones, enmiendas, protestas, declaraciones, oposiciones, cancelaciones, apelaciones y reclamos; pagar impuestos, cuotas y gravámenes prescritos por la ley; renunciar o desistir a derechos concedidos o en curso de concesión; recibir toda clase de documentos y valores dando el descargo respectivo, y, en general, para dar ante dichas autoridades todos los pasos necesarios al efecto indicado y tomar todas las medidas que creyeren conducentes al resguardo de nuestros intereses, con todas las demás facultades necesarias y por este documento desde ahora declaramos válido y bueno todo cuanto los apoderados hicieren en nuestro beneficio.

Este poder comprende la facultad de ratificar o confirmar en nuestro nombre lo actuado, así como la facultad de desistir, transigir, comprometer, conciliar, sustituir y revocar sustituciones, recibir notificaciones y nombrar apoderados judiciales o extrajudiciales.

Firmado en São Paulo, Brasil el 31 de enero de 2003.



31 JAN 2003

MINISTERIO DE
RELACIONES EXTERIORES

NO SE ASUME
RESPONSABILIDAD DEL TEXTO

2003 FEB 17 P 12:29

JEFE DE CALIFICACIONES

205140
H. Labore de A
CUYA FIRMA APARECE EN EL
DOCUMENTO DESEMPEÑA
LAS FUNCIONES INDICADAS

CONSULADO GENERAL DE COLOMBIA EN SÃO PAULO

N.º 1031

EL SUSCRITO CONSUL GENERAL DE COLOMBIA, visado los documentos presentados por los interesados, CERTIFICA: Que el señor EDERSON MARQUES CARDOSO de BRASIL quien como ESCRIBIENTE AUTORIZADO autorizó la firma del signatario del poder. presente, vigente en la fecha las funciones indicadas y su firma corresponde a la registrada en este Consulado: Que el señor JOHNSON R. JOHNSON INDUSTRIAL LTDA. BRASIL que antes de JOSE ANTONIO JUSTINO FILHO RICARDO ALVES BASTOS REPRESENTANTES LEGALES de la ciudad campesina conlleva(n) el poder precedente y cuyo(s) limit(es) función(s) autorizada(s) ante NOT. 13 BUTANTA - SP representante(s) legal(es) en este país.

El Consulado no asume responsabilidad por el contenido del documento

São Paulo, 12.02.2003

DERECHOS USO 28 POLVINTITULO DOLARES

PAGADO IMPUESTO DE TIMBRE

"Si está inconforme con el servicio prestado, diríjase al Área de Quejas y Reclamos del Ministerio de Relaciones Exteriores, Carrera 6 N.º 8-48, Bogotá, D.C., Colombia; email: cdejaas@minrext.gov.co"



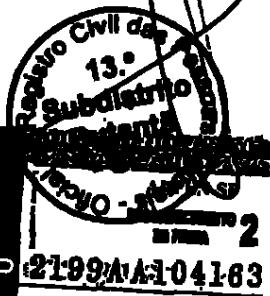
Marta M. Arevalo
MARTHA LAFAURIE DE AREVALO
CONSUL GENERAL

CONSULADO
DE COLOMBIA

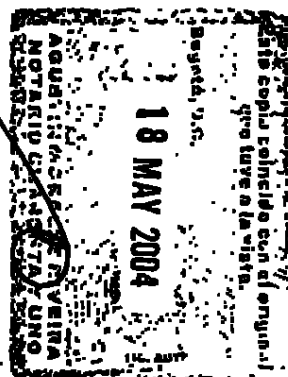
OFICIAL DO REGISTRO CIVIL DAS PESSOAS NATURAIS DO 1º SUBDISTRITO BUTANTA
Cidade: São Paulo - SP - Brasil - CEP: 011-900-000 - Tel: (11) 3210-1111
Reconheço por Escritura Pública de 17/02/03, as firmas dos Srs.
ANTONIO JUSTINO FILHO e RICARDO ALVES BASTOS, as quais
conferem com o padrão depositado em cartório.
São Paulo, 12 de Fevereiro de 2003.
Em Testemunha da Verdade

Válido somente com selo de autenticidade
Cont. 2009878410210100033449 - 2da 2: Total 4,44

Edson Marques Cardoso dos Santos
Escritório Autêntico



SP 2199/A-104163



6

GLADYS GUERRERO DE BELTRAN
TRADUCTORA OFICIAL PORTUGUES - ESPAÑOL - PORTUGUES
RESOLUCION No. 5260 DEL MINISTERIO DE JUSTICIA
Tels : 2180800 - 6435625
Bogotá D.C. - Colombia

TRADUCCIÓN OFICIAL NÚMERO 076

De sello en portugués que se encuentra en un documento de poder otorgado por la empresa JOHNSON & JOHNSON INDUSTRIAL LTDA a JIMENA ESCOBAR-URIBE y/o IGNACIO ESCOBAR-URIBE, que dice:

Notaría 13 de São Paulo. Reconozco como auténticas las firmas de José Antonio Justino Filho y Ricardo Alves Bastos, las cuales son idénticas a las registradas en esta Notaría, São Paulo, 31 de Enero de 2003. En testimonio de la verdad. (Fdo.) Ederson Marques Cardoso dos Santos, Escribiente Autorizado. Válido únicamente con el sello de autenticidad. Hay un sello de autenticidad del Colegio Notarial de São Paulo.

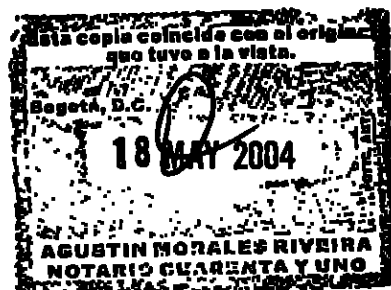
Hay sello del Consulado General de Colombia en São Paulo, con el número 031, autenticando la firma de Ederson Marques Cardoso dos Santos, Escribiente Autorizado de la Notaría 13 de São Paulo, certificando que la Compañía Johnson & Johnson Industrial Ltda., es una sociedad constituida de acuerdo con las leyes del Brasil y que los Señores José Antonio Justino Filho y Ricardo Alves Bastos son los representantes legales de la empresa, a los 12 días del mes de Febrero de 2003, debidamente firmado por Martha de Arévalo, Cónsul General.

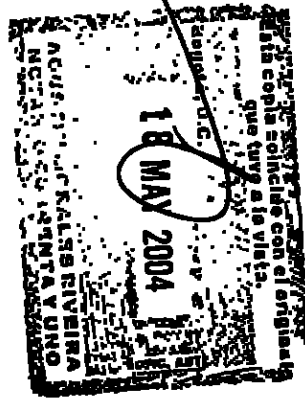
Hay un sello del Ministerio de Relaciones Exteriores de Colombia, con el No. 205140, autenticando la firma de Martha de Arévalo, a los 17 días del mes de Febrero de 2003, firmado por el Jefe de Legalizaciones.

La anterior es traducción fiel de sellos en portugués que tengo a la vista de lo cual doy fe y firmo en Bogotá D.C. a los 24 días del mes de Febrero de 2003.

Gladys de Beltrán

GLADYS GUERRERO DE BELTRAN
TRADUCTORA E INTERPRETE OFICIAL
RESOLUCION No. 5260 13 OCT /69
DEL MINISTERIO DE JUSTICIA





MINISTERIO DE RELACIONES
EXTERIORES

Guillermo Guzmán

014448

NO SE ASUME
RESPONSABILIDAD DEL TEXTO

2003 MAR -3 P 12:32

COTA FIRMA APARECE EN EL
DOCUMENTO DESEMPEÑA
LAS FINANCIERAS INDICADAS

JEFE DE LEGALIZACIONES
SANTAFE DE BOGOTA D.C.

RESUMEN DE LA INVENCION

Un cepillo de dientes que comprende una cabeza, 10, que lleva un grupo de cerdas, 20; un mango alargado, 30, que tiene un extremo libre, 31, y un extremo opuesto, 32; y un cuello, 40, que conecta el extremo opuesto, 32, del mango, 30, con la cabeza, 10; dicho mango, 30, presenta en su cara frontal, 30a, y en el extremo opuesto, 32, un primer hombro, 33, que define una región frontal, 33a, de apoyo de pulgar; y en su cara posterior, 30b, y separado del primer extremo, 31, un segundo hombro, 34, que tiene lados opuestos para apoyar el dedo meñique y el dedo anular, respectivamente; el primero y el segundo hombros, 33, 34, son usados cuando el cepillo de dientes es sujetado con las cerdas, 20, vueltas hacia el usuario; el mango, 30, tiene un contorno de sección transversal que aumenta generalmente desde la región frontal, 33a, de apoyo de pulgar cerca del primer hombro, 33, hasta el segundo hombro, 34; la cara posterior, 30b, del mango, 30, está provista además con una región posterior, 35a, de apoyo de pulgar, a ser usada cuando el cepillo de dientes es sujetado con las cerdas, 20, volteadas del usuario.

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EA

CEPILLO DE DIENTES

CAMPO DE LA INVENCION

5 En términos generales, la presente invención se refiere a cepillos
 - de dientes y, particularmente, a una construcción para un mango de cepillo de
 - dientes que tiene características ergonómicas mejoradas, que aumenta la
 comodidad del usuario durante la operación de cepillado de los dientes.

ANTECEDENTES DE LA INVENCION

10 Los cepillos de dientes deben estar diseñados para asegurar un
 agarre firme y seguro del mango por el usuario, y consecuentemente una
 operación de cepillado eficiente y cómoda de las diferentes partes y
 15 superficies de las arcadas dentales.

 Para permitir que el usuario alcance dichas partes diferentes de
 la boca y cepille diferentes superficies de los dientes de acuerdo con
 diferentes movimientos de cepillado, los cepillos de dientes deben tener su
 mango diseñado para asegurar un agarre adecuado en diferentes condiciones
 20 operacionales de rotación del mango con respecto a la mano del usuario.

 Pretendiendo obtener una construcción que garantice un agarre
 seguro y cómodo en diferentes condiciones operacionales definidas por el
 usuario mismo durante la operación de cepillado, se han propuesto diferentes

mangos de cepillo de dientes, algunos mangos presentando una sección transversal circular o poligonal que se mantiene sustancialmente constante a lo largo de dicho mango. En otros casos, la sección transversal del mango sufre alteraciones dimensionales a lo largo del mismo, particularmente con respecto a su altura, para formar hombros, que ayudan a la fijación axial del mango con respecto a la mano del usuario. En estos casos, la fijación rotacional del cepillo de dientes es obtenida por la sección transversal del mango, que está conformada para hacer difícil la rotación involuntaria del mango alrededor de su eje longitudinal.

Estas soluciones con una sección transversal poligonal, usualmente conducen a cepillos de dientes que no son cómodos de sujetar. Además, en otros casos, junto con variaciones en las dimensiones de la sección transversal a lo largo del mango, este está provisto además con insertos hechos de un material elastomérico anti-resbalamiento, teniendo superficies lisas o irregulares.

Estas construcciones de la técnica anterior, entre las cuales se encuentra la construcción descrita en la solicitud de patente PCT/US96/12944 (WO 97/07706), tienen el objeto de proveer cepillos de dientes que son fáciles de agarrar y controlar, dando un mejor control de los movimientos de cepillado en las diferentes posiciones elegidas por el usuario.

En el documento de la técnica anterior arriba citado, el mango propuesto comprende: una porción de hombro frontal que está formada preferiblemente de un inserto elastomérico; un cuello que conecta la porción

de hombro con la cabeza del cepillo de dientes; una porción de extremo libre con una sección transversal incrementada; y una porción de cintura provista entre la porción de hombro y la porción de extremo libre y presentando una anchura y altura ligeramente inferiores a las de la porción de hombro.

- 5 También se menciona en esta solución de la técnica anterior que la forma impartida al mango aumenta la comodidad del usuario cuando lo sujeta.

Aunque la provisión de la porción de hombro, la porción de cintura y la porción de extremo alargado mejora el agarre del usuario y el control sobre los movimientos de cepillado, esta solución de la técnica anterior
10 conduce a un mango que no se adapta ergonómicamente a las manos del usuario en las diferentes condiciones operacionales. El mango también está Innecesariamente alargado en regiones en las cuales el agarre tiene solo la función de dirigir los movimientos, como ocurre en la región de la porción de hombro. Las alteraciones en la dimensión de la sección transversal a lo largo
15 de la extensión del mango producen efectivamente medios para retener o fijar las manos. No obstante, estos medios de retención no están diseñados para dar una colocación correcta y cómoda de los dedos del usuario alrededor del mango, y para permitir un control más preciso de los movimientos de la
cabeza del cepillo de dientes y consecuentemente del grupo de cerdas.

- 20 Todavía en relación con la adaptación deficiente de los dedos del usuario alrededor del mango, las soluciones de la técnica anterior, que están provistas con las porciones de hombro, cintura y extremo libre alargado, tal como ocurre con el que se describe en PCT, US96/12944, presentan la

extensión longitudinal del mango desarrollado de acuerdo con una alineación rectilínea contenida en un plano medio, que es usualmente paralelo al plano de montaje de las cerdas a la cabeza del cepillo de dientes. El desarrollo longitudinal rectilíneo del cepillo de dientes no siempre permite alcanzar una adaptación cómoda del mango a la palma de la mano. Aunque la provisión de porciones localizadas de hombro y alargada tiene el propósito de dar al mango la característica ergonómica deseada, la simple existencia de dichos elementos ha conducido a diseños más bien pesados que menoscaban el control y la maniobrabilidad del cepillo de dientes, esto es, la agudeza y precisión de los movimientos que el cepillo de dientes debe impartir durante la operación de cepillado de los dientes.

En resumen, se puede decir que las soluciones propuestas hasta ahora no han tenido éxito para eliminar la necesidad de proveer un cepillo de dientes con un mango más ergonómico, para dar al usuario un mejor agarre y más comodidad durante el cepillado, esto es, un mejor control en términos de agudeza y precisión de los movimientos.

OBJETOS DE LA INVENCION

En virtud de las deficiencias arriba mencionadas con respecto a los mangos conocidos de cepillos de dientes, la presente invención propone una nueva construcción de un cepillo de dientes con características ergonómicas sustancialmente mejoradas, dando al usuario más control sobre

los movimientos a efectuar, con la sensación de más comodidad y seguridad cuando se sujeta el cepillo de dientes, facilitando y motivando el acto de cepillado de los dientes.

Un objeto más específico de la presente invención es proveer un cepillo de dientes como se mencionó arriba, que permite lograr la operación de cepillado con más comodidad, resultando de la colocación correcta de los dedos del usuario, particularmente el pulgar, el dedo meñique y el dedo anular alrededor del mango, así como también una mejor adaptación de toda la extensión del mango a la palma de la mano, para proveer un mejor agarre y una firme prensión del mango, permitiendo lograr niveles de agudeza y precisión de movimientos no alcanzados antes con los cepillos dentales conocidos.

BREVE DESCRIPCION DE LA INVENCION

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Para alcanzar los objetos arriba mencionados, se han hecho mejoramientos ergonómicos básicos de construcción en un cepillo de dientes del tipo que comprende, usualmente en una sola pieza: una cabeza que tiene una cara frontal construida para llevar un grupo de cerdas, que están desarrolladas en cualquier disposición adecuada; un mango alargado que tiene un extremo libre, un extremo opuesto, una cara frontal y una cara posterior; y un cuello que conecta el extremo opuesto del mango con la cabeza.

De acuerdo con la invención, el mango comprende un primer hombro que define una región frontal de apoyo de pulgar y que está provisto en la cara frontal del mango en su extremo opuesto; un segundo hombro que tiene lados opuestos para apoyar el dedo meñique y el dedo anular, respectivamente, y que está provisto en la cara posterior del mango, separado de dicho mango, dicho primero y segundo hombros siendo usados cuando el cepillo de dientes es sujetado con las cerdas vueltas hacia el usuario; y una región posterior de apoyo de pulgar provista en la cara posterior del mango, cerca de su extremo opuesto, para ser usada cuando el cepillo de dientes sea sujetado con las cerdas volteadas del usuario. El mango tiene un contorno de sección transversal que aumenta de forma continua o discontinua, desde la región frontal de apoyo del pulgar, cerca del primer hombro, hasta el segundo hombro. El mango puede estar provisto además con una curvatura a lo largo de su longitud para hacer la cara frontal convexa y la cara posterior cóncava.

15

BREVE DESCRIPCION DE LOS DIBUJOS

La invención se describirá más adelante con referencia a los dibujos anexos en los cuales:

20

La figura 1 es una vista lateral en elevación de una posible configuración del cepillo de dientes de la presente invención, que en esta ilustración incorpora una cabeza sin cerdas;

La figura 2 es una vista en planta superior del cepillo de dientes

de la figura 1, cuando se observa desde el lado sobre el cual se montan las cerdas en la cabeza.

La figura 3 es una vista en perspectiva de un cepillo de dientes formado con el mango ilustrado en las figuras 1 y 2, dicho mango siendo
5 mantenido por la mano de un usuario en una primera condición de sujeción, con las cerdas frente al usuario;

La figura 4 es una vista lateral en elevación del cepillo de dientes, ilustrando además esquemáticamente las fuerzas que actúan sobre las diferentes partes del mango cuando es sostenido en la primera condición
10 de sujeción ilustrada en la figura 3;

La figura 5 es una vista en perspectiva similar a la de la figura 3, pero ilustrando el cepillo de dientes en una segunda condición de sujeción en la cual las cerdas están volteadas del usuario;

La figura 6 es una vista lateral en elevación del cepillo de
15 dientes, ilustrando además esquemáticamente las fuerzas que actúan sobre las diferentes partes del mango cuando es sostenido en la segunda condición de sujeción ilustrada en la figura 5; y

Las figuras 7 y 8 son vistas similares a las de las figuras 1 y 2, pero ilustrando una segunda modalidad del cepillo de dientes.

20

DESCRIPCION DE LA MODALIDAD ILUSTRATIVA

Como se ilustra en los dibujos, el cepillo de dientes de la

presente invención comprende, moldeada preferiblemente en una sola pieza hecha de un material adecuado tal como polipropileno, una cabeza 10 con un contorno adecuado y que tiene una cara frontal 10a, que es usualmente plana y construida para recibir y fijar un grupo de cerdas 20, y una cara posterior

5 10b. El cepillo de dientes comprende además un mango alargado 30 que tiene un extremo libre 31, un extremo opuesto 32, una cara frontal 30a, y una cara posterior 30b, el mango 30 estando conectado a la cabeza 10 por medio de un cuello 40 que también tiene una cara frontal 40a y una cara posterior 40b, y una extensión longitudinal que corresponde a aproximadamente $\frac{1}{4}$ de

10 la longitud del mango 30.

De preferencia, el mango 30, el cuello 40 y la cabeza 10 están construidas simétricamente con respecto a un plano longitudinal medio P que intercepta la cara frontal y posterior de estas partes componentes del cepillo de dientes.

15 El mango 30 comprende un primer hombro 33 que define una región frontal 33a de apoyo de pulgar, que está incorporada en la cara frontal 30a del mango 30, en el extremo opuesto 32 del último y, más específicamente en la región en donde el mango 30 está unido al cuello 40.

En la cara posterior 30b del mango 30 en el extremo libre del mismo, está

20 formado un segundo hombro 34 que presenta dos lados opuestos para apoyar el dedo meñique y el dedo anular, respectivamente; es decir, un dedo en cada lado del segundo hombro 34.

Como se ilustra en la figura 3, el primer hombro 33 y el segundo

hombro 34 son usados cuando el cepillo de dientes es sujetado con las cerdas 20 de frente al usuario, dicha sujeción siendo denominada aquí como la primera condición de sujeción.

De acuerdo con la modalidad ilustrada en las figuras 1-6, el presente cepillo de dientes tiene el contorno de sección transversal del mango 30 que aumenta continua y progresivamente, desde la región frontal 33a de apoyo de pulgar cerca del primer hombro 33, hasta el segundo hombro 34, cuando dicho contorno de sección transversal comienza a sufrir una reducción progresiva, preferiblemente por contornos laterales, que están ligeramente curvos de manera convexa y coinciden con el extremo libre redondo 31 del mango 30. En la primera modalidad ilustrada en las figuras 1-6, la sección transversal del mango 30, y no solo su contorno, aumenta continuamente desde la región frontal 33a de apoyo de pulgar, hasta el segundo hombro 34. Similarmente, el grosor del mango 30 también se reduce progresivamente desde el segundo hombro 34 que está provisto en una región separada del extremo libre adyacente 31 del mango 30, dicho grosor estando reducido hasta que el extremo libre redondeado 31a del mango 30 coincide con el contorno de sección transversal del mango en esta región.

En las construcciones ilustradas, la anchura del mango 30 disminuye progresivamente, desde la anchura máxima en la región media del mango 30 hasta el extremo libre 31, en donde dicha anchura tiene un valor sustancialmente igual al de la región en donde se provee el primer hombro 33. Similarmente, el contorno de sección transversal del mango 30 se reduce

progresivamente desde su valor máximo en el segundo hombro 34 hasta alcanzar el extremo libre 31 del mango 30.

En las construcciones ilustradas, el mango está construido para presentar una distancia entre el primer hombro 33 y el segundo hombro 34, correspondiente a aproximadamente 70-90% de la longitud total del mango 30, el resto de dicha longitud siendo completada por la distancia del segundo hombro 34 al extremo libre 31.

Como se ilustra mejor en las figuras 1, 4, 6 y 7, el mango 30 tiene una curvatura que se desarrolla a lo largo del plano longitudinal medio P que intercepta la cara frontal y posterior 30a y 30b del mango 30, para hacer dicha cara frontal 30a convexa y dicha cara posterior 30b cóncava.

La curvatura de la cara posterior 30b está hecha a fin de definir en el extremo opuesto 32 del mango 30, una región posterior 35a de apoyo de pulgar, para ser usada cuando el cepillo de dientes sea sujetado con las cerdas 20 volteadas del usuario, como se ilustra en la figura 5; dicha sujeción siendo denominada aquí la segunda condición de sujeción.

En la modalidad ilustrada en las figuras 1-6, el primer hombro 33 y el segundo hombro 34 tienen una anchura que es igual a la anchura de la región del mango 30 en donde están provistos; dichos hombros estando definidos por declives que coinciden con la cara frontal 30a y la cara posterior 30b respectivas, desde las cuales se proyectan.

De acuerdo con la curvatura longitudinal impartida al mango 30, su cara frontal 30a está definida por un arco convexo que se extiende con al

menos un radio de curvatura, desde la región del primer hombro 33 hasta el extremo libre 31a del mango 30. Similarmente, la cara posterior 30b del mango 30 está definida por un arco cóncavo que se extiende, por lo menos con un radio de curvatura, desde la región del primer hombro 33, en donde define la región posterior 35a de apoyo de pulgar, hasta el extremo libre 31 del mango 30.

En la modalidad ilustrada en las figuras 1-6, la cara posterior 30b del mango 30, entre el segundo hombro 34 y el extremo libre 31, está en la forma de una superficie posterior 30c que converge con la porción correspondiente de la cara frontal 30a del mango 30 y coincide con el segundo hombro 34, dicha superficie posterior 30c estando configurada preferiblemente en una forma ligeramente convexa.

La construcción arriba descrita del mango permite que, en la primera condición de sujeción ilustrada en la figura 3, el pulgar del usuario descansa contra la región frontal 33a de apoyo de pulgar, cerca del primer hombro 33, mientras el dedo meñique y el dedo anular se apoyen sobre la cara posterior 30b cerca del segundo hombro 34, y la palma de la mano sea oprimida contra la cara frontal 30a, en un arco convexo, en la región de la última cercana al segundo hombro 34, en donde tanto el grosor como la anchura del mango 30 son más grandes. La colocación correcta de los dedos del usuario, particularmente su pulgar, en la región con la sección transversal más pequeña, permite un control direccional más preciso de los movimientos por impartir a la cabeza 10 del cepillo de dientes durante el cepillado. El

pulgar permanece en una posición avanzada, anclada por el primer hombro 33, mientras que los otros dedos y la palma de la mano encuentran una sección transversal de dimensión más grande, con el dedo meñique y el dedo anular del usuario estando apoyados cada uno sobre uno de los lados opuestos del segundo hombro 34, asegurando una prensión mejor y más segura del mango, dando firmeza y comodidad al agarre. El primero y segundo hombros, 33, 34, inducen al usuario a colocar correctamente su pulgar, dedo meñique y dedo anular, haciendo difícil el uso inapropiado del cepillo de dientes.

10 En la segunda condición de sujeción ilustrada en la figura 5, el pulgar del usuario se apoya contra la región posterior 35a de apoyo de pulgar, sobre la cara posterior 30b del mango 30, mientras que el dedo meñique y el dedo anular se apoyan contra la cara frontal 30a en un arco convexo del mango 30, en la región de dicha cara frontal 30a con una sección transversal más grande, y en donde la última se hace convergente con respecto a la cara posterior 30c del extremo libre 31 del mango 30. En esta segunda condición de sujeción, el dedo meñique tiende a abarcar la cara posterior 30b del mango 30, cerca del segundo hombro 34, dando estabilidad a la sujeción del mango. El aumento de la sección transversal tiene el efecto de mejorar la prensión del mango 30, como ya se mencionó con respecto a la primera condición de sujeción. Se debe observar además que el pulgar asentado sobre la región posterior 35a de apoyo de pulgar, también permanece en una posición avanzada, facilitando dirigir los movimientos por impartir a la cabeza 10, es

decir, dando más agudeza a los movimientos del cepillo de dientes.

Aún de conformidad con las modalidades ilustradas, el cuello 40 tiene una anchura que disminuye desde un valor igual al de la anchura del mango 30 en la región adyacente del primer hombro 33, hasta un valor mínimo en la región en donde está conectado a la cabeza 10. La cara frontal 40a del cuello 40 coincide con el primer hombro 33 por medio de una superficie coincidente cóncava 43, usualmente en la forma de una superficie cilíndrica.

El cuello 40 y la cabeza 10 pueden presentar las caras posteriores 40b y 10b definidas en la misma superficie convexa que coincide con la cara posterior cóncava 30b del mango 30, por medio de la región posterior 35a de apoyo de pulgar que está preferiblemente desalineada del primer hombro 33.

Pretendiendo dar una característica más ergonómica al cepillo de dientes, el cuello 40 y la cabeza 10 pueden estar provistos de acuerdo con una dirección longitudinal que forma, en el lado de la cara frontal 30a del mango 30, un ángulo obtuso con respecto a la dirección longitudinal de desarrollo del mango 30; el cuello 30 y por lo menos una cierta extensión del mango 30 entre el primero y el segundo hombro 33, 34, estando definidos lateralmente en una vista en planta por dos alineaciones rectilíneas que convergen mutuamente en dirección de la cabeza 10 y que son simétricas con respecto al plano longitudinal medio P.

La modalidad ilustrada en las figuras 7 y 8 es una variante de la

que se describió arriba, y se distingue primeramente por el hecho de que la región posterior 35a de apoyo de pulgar está definida por un tercer hombro 35 localizado del otro lado del primer hombro 33, y definido por un declive que coincide con la cara posterior 30b del mango 30 desde el cual se proyecta. El

5 tercer hombro 35 incrementa la región posterior 35a de apoyo de pulgar.

En la modalidad de las figuras 7 y 8, el mango ahora incorpora en la región del primer y tercer hombro 33, 35, un par de primeros hombros laterales 36, que son opuestos entre sí y se proyectan ligeramente desde el contorno del mango 30, cada primer hombro lateral 36 estando definido por un

10 par de declives opuestos que coinciden entre sí y con la cara adyacente del mango 30 desde la cual se proyecta el primer hombro lateral 36 respectivo.

Esta construcción da al mango 30 un ensanchamiento lateral para ambos lados en la región del primero y segundo hombros 33, 35, mejorando más la comodidad tanto para apoyar los dedos como para sujetar

15 el mango 30 del cepillo de dientes.

En esta construcción variante, el mango 30 incorpora además en su cara posterior 30b un cuarto hombro 37, que mantiene con el tercer hombro 35 una separación suficiente para adaptar uno de los dedos del

usuario, ya sea el dedo índice o la punta del pulgar, al sujetar el mango 30 en

20 las condiciones ilustradas en las figuras 3, 4, 5 y 6.

Como se ilustra en las figuras 7 y 8, el cuarto hombro 37 está definido por un par de declives opuestos que coinciden entre sí y con la cara posterior 30b del mango 30, sobre ambos lados del cuarto hombro 37.

Pretendiendo aumentar más el agarre, el mango 30 puede incorporar un par de segundos hombros laterales 38, opuestos entre sí y proyectándose ligeramente desde el contorno del mango 30 en la región de este en donde está provisto el cuarto hombro 37; cada segundo hombro lateral 38 estando definido por un par de declives opuestos, coincidiendo uno con otro y con la cara adyacente del mango 30 desde donde se proyecta el segundo hombro lateral 38 respectivo.

Como puede notarse, la variante de construcción ilustrada en las figuras 7 y 8 provee un cepillo de dientes cuyo mango 30 aún mantiene un contorno de sección transversal que aumenta generalmente desde la región frontal 33a de apoyo de pulgar hasta el segundo hombro 34, aunque dicho aumento del contorno de sección transversal se interrumpe en la región en donde se provee el cuarto hombro 37 y los segundos hombros laterales 38.

De esta manera, aunque en ambas formas de construcción el contorno de sección transversal del mango 30 aumenta generalmente entre la región frontal 33a de apoyo de pulgar y el segundo hombro 34, solamente en la primera modalidad ilustrada en las figuras 1-6 dicho contorno de sección transversal aumenta continuamente.

Aunque se han descrito e ilustrado solo dos modalidades de la presente invención, se debe entender que se podrían efectuar alteraciones en la forma de las construcciones sin apartarse del concepto de la invención, definido en las reivindicaciones que acompañan la presente descripción.

NOVEDAD DE LA INVENCION**REIVINDICACIONES**

1.- Un cepillo de dientes que comprende una cabeza (10) que
5 tiene una cara frontal (10a) construida para llevar un grupo de cerdas (20); un
mango alargado (30) que tiene un extremo libre (31), un extremo opuesto (32),
una cara frontal (30a) y una cara posterior (30b); y un cuello (40) que conecta
el extremo opuesto (32) del mango (30) con la cabeza (10); caracterizado
porque el mango (30) comprende un primer hombro (33) que define una
10 región frontal (33a) de apoyo de pulgar y que está provisto sobre la cara
frontal (30a) del mango (30) en su extremo opuesto (32); un segundo hombro
(34) que tiene lados opuestos para apoyar el dedo meñique y el dedo anular,
respectivamente, y que está provisto sobre la cara posterior (30b) del mango
(30) separado del extremo libre (31) del último, dicho primero y segundo
15 hombros (33, 34) siendo usados cuando el cepillo de dientes es sujetado con
las cerdas (20) vueltas hacia el usuario; y una región posterior (35a) de apoyo
de pulgar provista sobre la cara posterior (30b) del mango (30), cerca de su
extremo opuesto (32), para ser usada cuando el cepillo de dientes sea
sujetado con las cerdas (20) volteadas del usuario, el mango (30) teniendo un
20 contorno de sección transversal que aumenta generalmente desde la región
frontal (33a) de apoyo de pulgar cerca del primer hombro (33), hasta el
segundo hombro (34).

2.- El cepillo de dientes de conformidad con la reivindicación 1,

caracterizado además porque el primero y el segundo hombros (33, 34) están definidos por declives que coinciden con la cara frontal (30a) y la cara posterior (30b) respectivas del mango (30), desde las cuales se proyectan dichos hombros.

5 3.- El cepillo de dientes de conformidad con la reivindicación 1, caracterizado además porque la anchura del mango (30) disminuye progresivamente, desde la anchura máxima en el segundo hombro (34) hasta el extremo libre (31) en donde tiene un valor sustancialmente igual al de la región en la cual está provisto el primer hombro (33).

10 4.- El cepillo de dientes de conformidad con la reivindicación 3, caracterizado además porque el extremo libre (31) del mango (30) está redondeado y coincide con el contorno de sección transversal del mango (30) en esta región.

15 5.- El cepillo de dientes de conformidad con la reivindicación 1, caracterizado además porque el contorno de sección transversal del mango (30) se reduce progresivamente, de su valor máximo en el segundo hombro (34), hasta alcanzar el extremo libre (31) del mango (30).

20 6.- El cepillo de dientes de conformidad con la reivindicación 1, caracterizado además porque la distancia entre el primer hombro (33) y el segundo hombro (34) corresponde a aproximadamente 70-90% de la longitud del mango (30).

7.- El cepillo de dientes de conformidad con la reivindicación 1, caracterizado además porque el mango (30) tiene una curvatura a lo largo de

un plano longitudinal medio (P) que intercepta la cara frontal (30a) y la cara posterior (30b) del mango (30), para hacer convexa la cara frontal (30a) y cóncava la cara posterior (30b).

8.- El cepillo de dientes de conformidad con la reivindicación 7, caracterizado además porque dicha región posterior (35a) de apoyo de pulgar está definida por la curvatura de la cara posterior (30b) cerca del extremo opuesto (32) del mango (30).

9.- El cepillo de dientes de conformidad con la reivindicación 7, caracterizado además porque la región posterior (35a) de apoyo de pulgar está definida por un tercer hombro (35) opuesto al primer hombro (33).

10.- El cepillo de dientes de conformidad con la reivindicación 9, caracterizado además porque el tercer hombro (35) está definido por un declive que coincide con la cara posterior (30b) del mango (30) desde la cual se proyecta.

11.- El cepillo de dientes de conformidad con la reivindicación 9, caracterizado además porque el mango (30) incorpora, en la región del primero y tercer hombros (33, 35), un par de primeros hombros laterales (36) que son opuestos entre sí y se proyectan ligeramente desde el contorno del mango (30), cada primer hombro lateral (36) estando definido por un par de declives opuestos que coinciden entre sí y con la cara adyacente del mango (30) desde la cual se proyecta el primer hombro lateral respectivo (36).

12.- El cepillo de dientes de conformidad con la reivindicación 9, caracterizado además porque el mango (30) incorpora, en su cara posterior

(30b), un cuarto hombro (37) que mantiene con el tercer hombro (35) una separación suficiente para adaptar uno de los dedos del usuario al sujetar el mango (30).

13.- El cepillo de dientes de conformidad con la reivindicación 12,

5 caracterizado además porque el cuarto hombro (37) está definido por un par de declives opuestos, que coinciden entre sí y con la cara posterior (30b) del mango (30) en ambos lados del cuarto hombro (37).

14.- El cepillo de dientes de conformidad con la reivindicación 12, caracterizado además porque el mango (30) incorpora un par de segundos
10 hombros laterales (38), opuestos entre sí y que se proyectan ligeramente desde el contorno del mango (30) en la región de este donde está provisto el
cuarto hombro (37).

15 **15.- El cepillo de dientes de conformidad con la reivindicación 14,**
caracterizado además porque cada segundo hombro lateral (38) está definido
por un par de declives opuestos, que coinciden entre sí y con la cara
adyacente del mango (30) desde la cual se proyecta el segundo hombro
lateral respectivo (38).

16.- El cepillo de dientes de conformidad con la reivindicación 7, caracterizado además porque la cara frontal (30a) del mango (30) se extiende en un arco convexo, por lo menos con un radio de curvatura, desde la región frontal (33a) de apoyo de pulgar cerca del primer hombro (33), hasta el extremo libre (31) del mango (30).

17.- El cepillo de dientes de conformidad con la reivindicación 12,

caracterizado además porque la cara posterior (30b) del mango (30), entre el segundo hombro (34) y el extremo libre (31), está en la forma de una superficie posterior (30c) que converge con la porción correspondiente de la cara frontal (30a) del mango (30) y coincidiendo con el segundo hombro (34).

5 18.- El cepillo de dientes de conformidad con la reivindicación 13, caracterizado además porque la superficie posterior (30c) es ligeramente convexa.

10 19.- El cepillo de dientes de conformidad con la reivindicación 7, caracterizado además porque el plano longitudinal medio (P) es un plano de simetría del mango (30), del cuello (40) y de la cabeza (10).

15 20.- El cepillo de dientes de conformidad con la reivindicación 7, caracterizado además porque la cara posterior (30b) del mango (30) está definida por un arco cóncavo que se extiende, por lo menos con un radio de curvatura, desde la región frontal de apoyo de pulgar (33a) cerca del primer hombro (33), en donde define la región posterior (35a) de apoyo de pulgar, hasta una región separada del extremo libre (31) del mango (30), en donde define el segundo hombro (34).

20 21.- El cepillo de dientes de conformidad con la reivindicación 7, caracterizado además porque la anchura del cuello (40) disminuye desde un valor que es igual a la anchura del mango (30) en la región frontal (33a) de apoyo de pulgar, cerca del primer hombro (33), hasta un valor mínimo en la región en la cual está unido a la cabeza (10).

22.- El cepillo de dientes de conformidad con la reivindicación 7,

caracterizado además porque el cuello (40) y la cabeza (10) tienen una cara posterior (40b, 10b), definida por una superficie convexa que coincide con la cara posterior cóncava (30b) del mango (30) por medio de la región posterior (35a) de apoyo de pulgar localizada ligeramente desalineada del primer
5 hombro (33).

23.- El cepillo de dientes de conformidad con la reivindicación 12, caracterizado además porque el cuello (40) y la cabeza (10) están provistos de acuerdo con una dirección longitudinal que forma, en el lado de la cara frontal (30a) del mango (30), un ángulo obtuso con respecto a la dirección
10 longitudinal de desarrollo del mango (30).

24.- El cepillo de dientes de conformidad con la reivindicación 17, caracterizado además porque el cuello (40) y por lo menos una cierta extensión del mango (30) entre el primer hombro (33) y el segundo hombro (34), presentan un contorno lateral definido por dos alineaciones rectilíneas
15 que convergen mutuamente en dirección de la cabeza (10), y que es simétrico con respecto al plano longitudinal medio (P).

25.- El cepillo de dientes de conformidad con la reivindicación 1, caracterizado además porque el cuello (40) tiene una cara frontal (40a) que coincide con el primer hombro (33) por medio de una superficie coincidente
20 cóncava (43).

26.- El cepillo de dientes de conformidad con la reivindicación 1, caracterizado además porque la sección transversal del mango (30) presenta un contorno que aumenta continua y progresivamente desde la región frontal

(33a) de apoyo de pulgar cerca del primer hombro (33), hasta el segundo
hombro (34).

27.- El cepillo de dientes de conformidad con la reivindicación 26,
caracterizado además porque el primero y segundo hombros (33, 34)
5 presentan una anchura que es igual a la anchura de la región del mango (30)
en la cual están provistos.

28.- El cepillo de dientes de conformidad con la reivindicación 26,
caracterizado además porque el mango (30) tiene una sección transversal que
aumenta continuamente desde la región frontal (33a) de apoyo de pulgar,
10 hasta el segundo hombro (34).

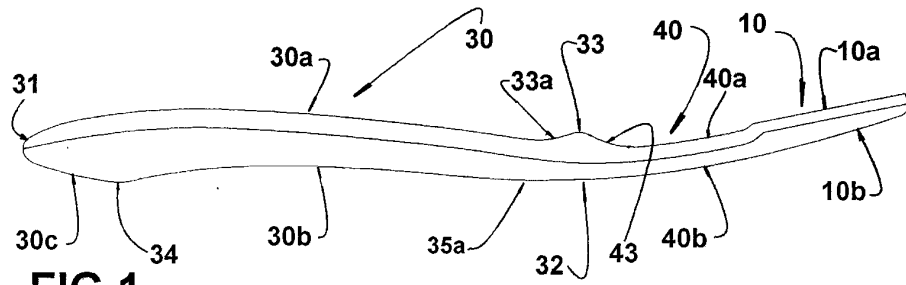


FIG. 1

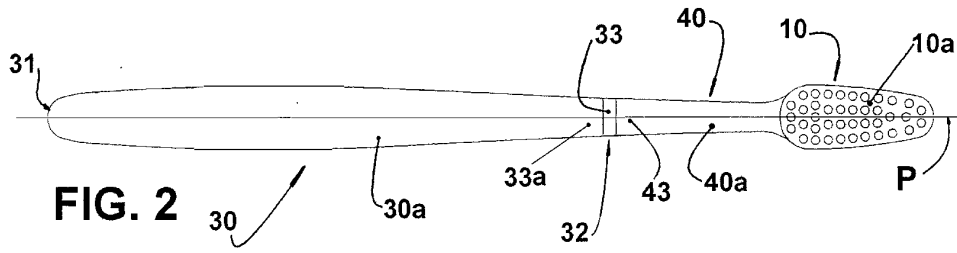


FIG. 2

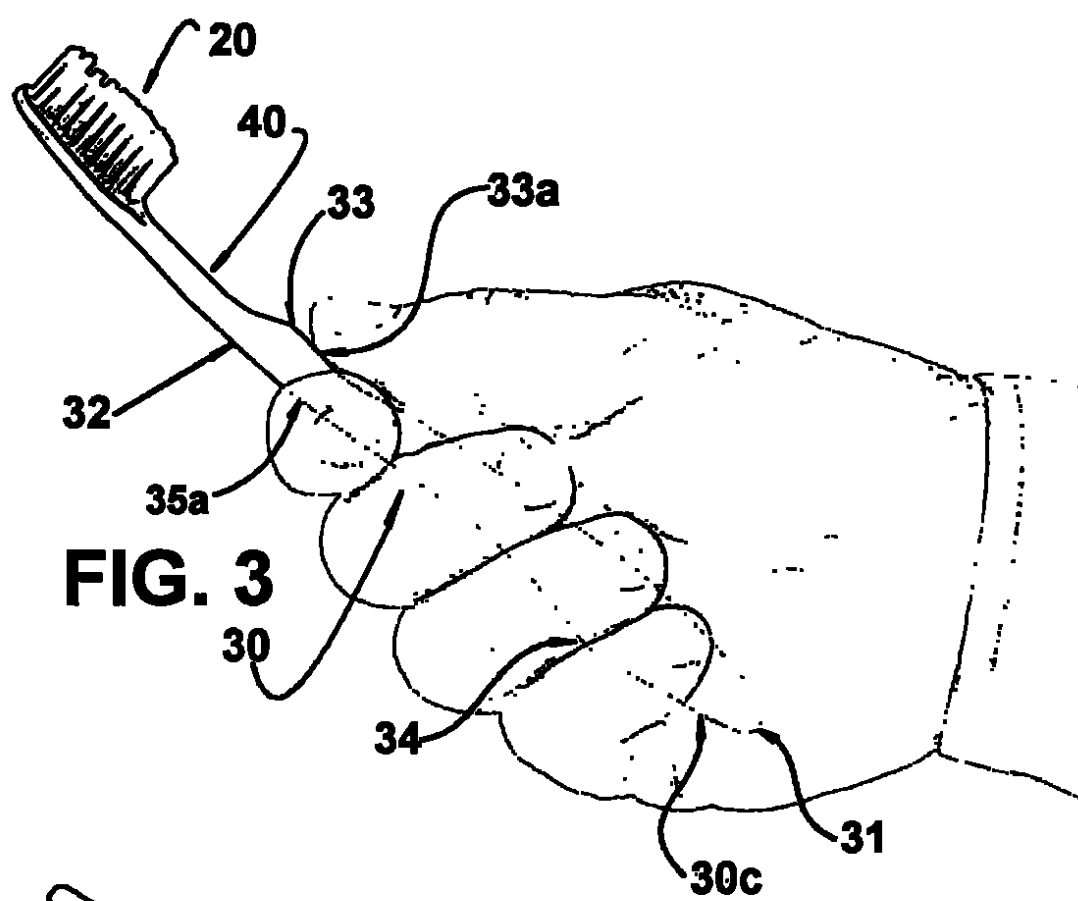


FIG. 3

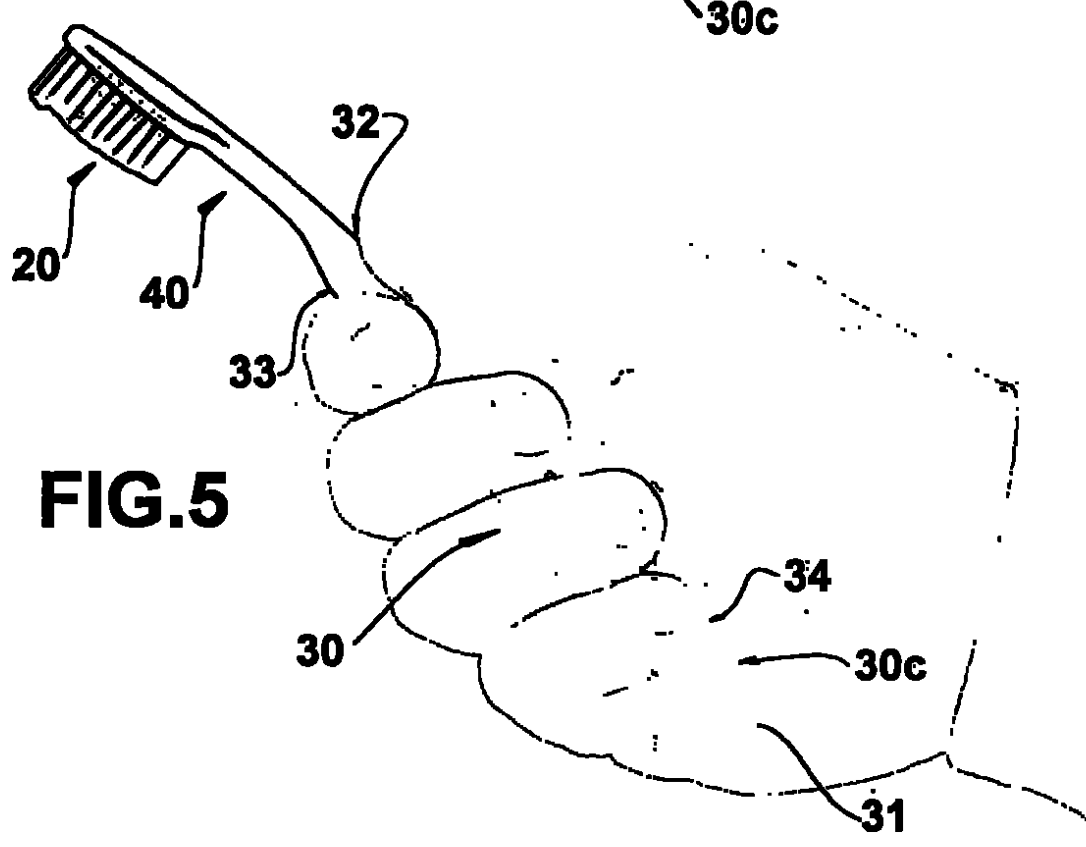
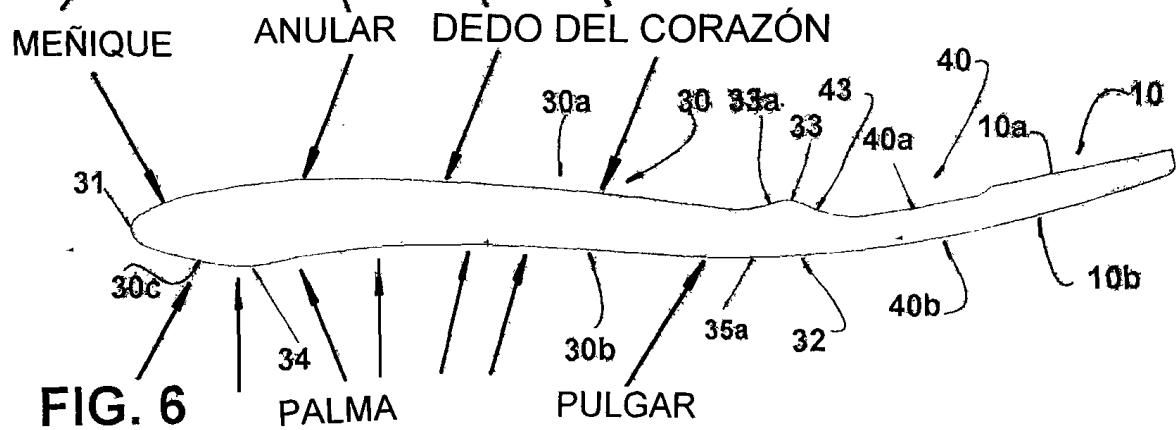
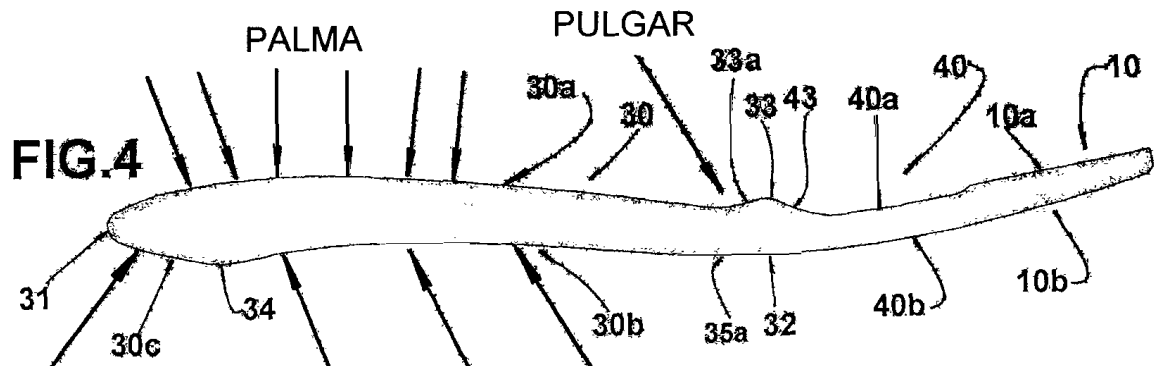
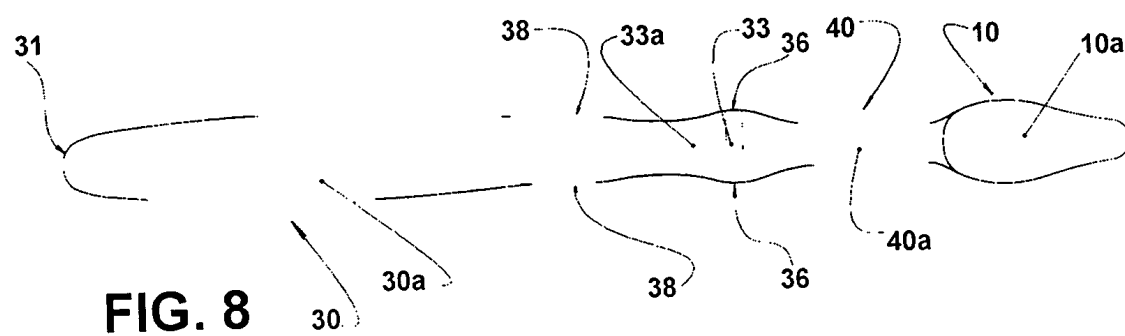
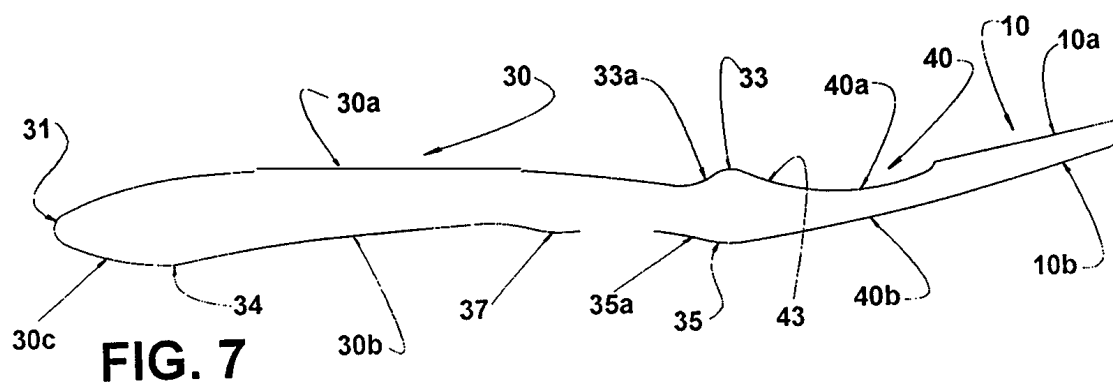


FIG. 5





(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

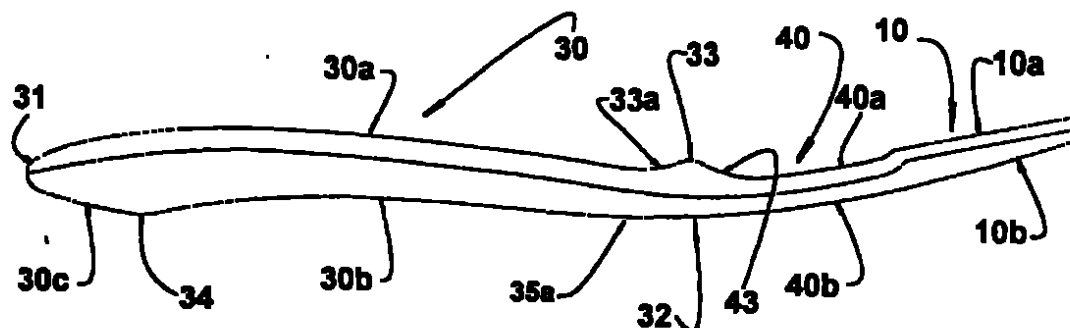
(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
12 June 2003 (12.06.2003)

PCT

(10) International Publication Number
WO 03/047388 A1

- (51) International Patent Classification⁷: A46B 5/02 ✓
Campos, SP (BR). MARSON NETO, Orlando [BR/BR];
Rua Nazim, 82, CEP-12307-030 Jacareí, SP (BR).
- (21) International Application Number: PCT/BR02/00170 ✓
- (22) International Filing Date: 4 December 2002 (04.12.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
PI 0106578-5 4 December 2001 (04.12.2001) BR ✓
PI 0205539-2 25 November 2002 (25.11.2002) BR
- (71) Applicant (for all designated States except US): JOHNSON & JOHNSON INDUSTRIAL LTDA [BR/BR];
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- (72) Inventors; and
- (73) Inventors/Applicants (for US only): ORIANI, Paulo, César, de Godoy [BR/BR]; Rua João Thomazine, 165, CEP-13253-450 Itatiba, SP (BR). DITLER, Arnaldo, Antonio [BR/BR]; Rua Esperança, 86/34, CEP-12243-700 São José dos Campos, SP (BR). SIMIONATO, Luiz, Bellino [BR/BR]; Rua Esperança, 227/801, CEP-12243-700 São José dos Campos, SP (BR). FALLEIROS, Alexandre, Petrocinai [BR/BR]; Rua Oscar Coelho Laurino, 171, CEP-12244-840 São José dos
- (74) Agents: ARNAUD, Antonio, M., P. et al.; Rua José Bonifácio, 93 - 7th floor, CEP-01003-901 São Paulo, SP (BR).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: TOOTHBRUSH



(57) Abstract: A toothbrush comprising a head (10) carrying a group of bristles (20); an elongated handle (30), having a free end (31) and an opposite end (32); and a neck (40), connecting the opposite end (32) of the handle (30) to the head (10). Said handle (30) presents, on its front face (30a) and at the opposite end (32), a first shoulder (33) defining a thumb supporting front region (33a); and, on its rear face (30b) and spaced from a free end (31), a second shoulder (34) having opposite sides for supporting the little finger and the ring finger, respectively. The first and the second shoulders (33, 34) are used when the toothbrush is gripped with the bristles (20) turned to the user. The handle (30) has a cross section contour that increases from the thumb supporting front region (33a), close to the first shoulder (33), to the second shoulder (34). The rear face (30b) of the handle (30) is provided with a thumb supporting rear region (35a), to be used when the toothbrush is gripped with the bristles (20) turned away from the user.

WO 03/047388 A1

PATENT COOPERATION TREATY

19 MAR 2003

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

To:

ARNAUD, Antonio M P
Rua José Bonifácio, 93
7th Floor
01003-901 Sao Paulo, SP
BRAZIL

Date of mailing
(day/month/year)

17/03/2003

Applicant's or agent's file reference

2074-5003

FOR FURTHER ACTION

See paragraphs 1 and 4 below

International application No.

PCT/BR 02/ 00170

International filing date
(day/month/year)

04/12/2002

Applicant

JOHNSON & JOHNSON INDUSTRIAL LTDA

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Further action(s): The applicant is reminded of the following:

Shortly after 18 months from the priority date, the International application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the International application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for International publication.

Within 18 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 18 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3018

Authorized officer

Myriam Weber

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 2074-5003	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/BR 02/00170	International filing date (day/month/year) 04/12/2002	(Earliest) Priority Date (day/month/year) 04/12/2001
Applicant JOHNSON & JOHNSON INDUSTRIAL LTDA		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/BR 02/00170

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A46B5/02

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)

IPC 7 A46B

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 practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 749 116 A (OECHSLIN THOMAS A ET AL) 12 May 1998 (1998-05-12) the whole document	1-10, 12, 13, 16-21, 23, 25
Y	—	11, 22
-Y	EP 0 580 406 A (JOHNSON & JOHNSON CONSUMER) 26 January 1994 (1994-01-26) the whole document	11
Y	WO 01 15567 A (GILLETTE CANADA COMPANY ; LEWENCZUK JEFFREY S (US); SZCZECZ GERALD) 8 March 2001 (2001-03-08) the whole document	1-6, 22, 25
	— -/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *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 doubt 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 when the document is taken alone
- *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
- *A* document member of the same patent family

Date of the actual completion of the international search

7 March 2003

Date of mailing of the international search report

17/03/2003

Name and mailing address of the ISA

European Patent Office, P.B. 5816 Patentplan 2
NL - 2200 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Neiller, F

INTERNATIONAL SEARCH REPORT

International Application No
PCT/BR 02/00170

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 780 924 A (HANSEN PAUL D ET AL) 1 November 1988 (1988-11-01) the whole document	1-6, 25

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/BR 02/00170

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5749116	A	12-05-1998	DE 19782240 T0 27-01-2000 WO 9830128 A1 16-07-1998 US RE37625 E1 09-04-2002
EP 0580406	A	26-01-1994	US 5339482 A 23-08-1994 AT 184761 T 15-10-1999 AU 1002397 A 20-02-1997 AU 3234099 A 19-08-1999 AU 4202693 A 27-01-1994 CA 2100825 A1 22-01-1994 DE 69326509 D1 28-10-1999 DE 69326509 T2 03-02-2000 EP 0580406 A1 26-01-1994 GR 93100293 A ,B 31-03-1994 JP 6154026 A 03-06-1994
WO 0115567	A	08-03-2001	US 6397425 B1 04-06-2002 AU 6795900 A 26-03-2001 BR 0013626 A 14-05-2002 EP 1211961 A1 12-06-2002 WO 0115567 A1 08-03-2001
US 4780924	A	01-11-1988	US 4850735 A 25-07-1989

NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purpose of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 18 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 48.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 48.2).

Where a demand for international preliminary examination has been filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/ may accompany the amendments?

Letter (Section 285(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

27 41

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 28, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 48.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 18, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 18 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



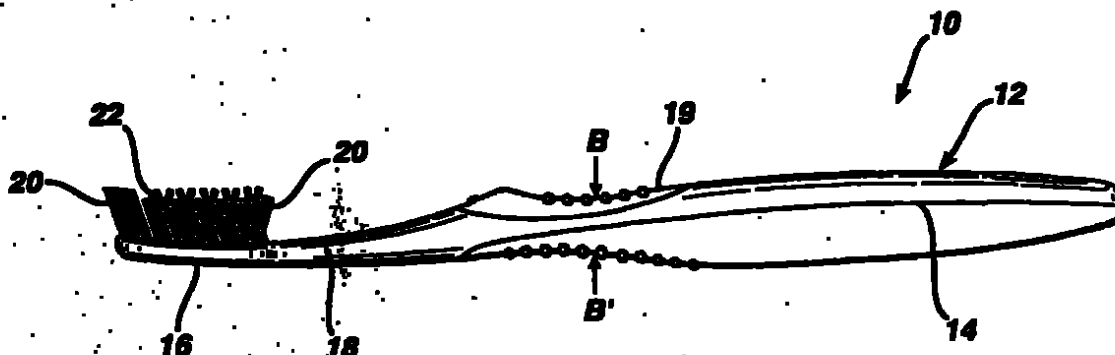
(43) International Publication Date
8 March 2001 (08.03.2001)

PCT

(10) International Publication Number
WO 01/15567 A1

- (51) International Patent Classification⁷: A46B 5/00
- (21) International Application Number: PCT/US00/22997
- (22) International Filing Date: 22 August 2000 (22.08.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
09/385,578 : 31 August 1999 (31.08.1999) US
- (63) Related by continuation (CON) or continuation-in-part (CIP) to earlier application:
US : 09/385,578 (CON)
Filed on : 31 August 1999 (31.08.1999)
- (71) Applicant (for all designated States except US):
GILLETTE CANADA COMPANY [CA/CA]; 4 Robert
Speck Parkway, Mississauga, Ontario L4Z 4C5 (CA).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): SZCZECZ, Gerald,
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- (74) Agents: GALLOWAY, Peter, D.; Ladas & Parry, 26 West
61 Street, New York, NY 10023 et al. (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ,
DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR,
HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM,
TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG,
CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
- Published:
— With international search report.
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: POLYPROPYLENE BRUSH BODY



(57) Abstract: An oral brush includes a) a body that includes a polymer composition that includes polypropylene and has a melt flow rate of at least about 10g/10 min, and b) bristles extending from the body.

WO 01/15567 A1

POLYPROPYLENE BRUSH BODY

The invention relates to polypropylene brush bodies.

A toothbrush generally includes a body having a handle portion, a head portion and bristles extending from the head portion. The bristles can be arranged in the form of tufts. A toothbrush is constructed to withstand the normal pressures exerted upon the brush during brushing of teeth and other surfaces of the oral cavity.

Toothbrushes have been manufactured by injecting a liquid polymeric composition, e.g., polypropylene, into a mold cavity that defines a toothbrush body, whereupon the polymer composition hardens (i.e., freezes) in the form of the body of the toothbrush, e.g., the handle and head of the brush. For two component toothbrush bodies, the body of the toothbrush is then transferred to a second mold cavity and a second liquid polymer composition, e.g., an elastomer, is injected into the second mold cavity to form a second portion of the brush body, e.g., the gripping member.

The amount of time that it takes the liquid polymer composition to harden in the mold cavity is referred to as the "set time". The "set time" influences the rate toothbrushes can be manufactured.

In one aspect, the invention features an oral brush that includes a body that includes a) a polymer composition that includes polypropylene and that has a melt flow rate of at least about 10 g/10 min, and b) a bristle extending from the body. In some embodiments, the body has a tensile strength of at least about 3100 psi. In other embodiments, the body has a tensile strength of at least about 3700 psi. The body can have a tensile strength of from about 3700 psi to about 6,000 psi.

In one embodiment, the body defines a shape that includes a handle and a head extending from said handle, where the handle includes a thumb grip having a cross-sectional area no greater than about 1.8 cm². In other embodiments, the body defines a shape that includes a handle and a head extending from said handle, said handle having a cross-sectional area no greater than about 1 cm².

In another embodiment, the polymer composition has a melt flow rate of from about 10 g/10 min to about 40 g/10 min. In some embodiments, the

polymer composition has a melt flow rate of from about 15 g/10 min to about 30 g/10 min. In still other embodiments, the polypropylene has a melt flow rate of in the range of from about 30 g/10 min to about 40 g/10 min.

5 In one embodiment, the polypropylene has a tensile strength of from about 4000 psi to about 6000 psi.

10 In other embodiments, the polymer composition further includes a plastomer. In one embodiment, the plastomer has a melt flow rate of from about 1.3 g/10 min to about 5.2 g/10 min. The plastomer can have a tensile strength of from about 1500 to about 3100 psi. In some embodiments, the plastomer includes a copolymer that includes ethylene and a polyalpha-olefin. The polymer composition can include from about 2% by weight to about 30% by weight plastomer. In other
15 embodiments, the polymer composition includes from about 10% by weight to about 20% by weight plastomer. In another embodiment, the polymer composition includes from about 75% by weight to about 90% by weight polypropylene, and from about 10% by weight to about 25% by weight of plastomer.

In another aspect, the invention features a process of manufacturing an oral brush body that includes injecting a polymer composition having a melt flow rate of at least 10 g/10 min into a mold cavity to form a body of the oral brush. In one embodiment the polymer composition includes polypropylene. In another
20 embodiment, the polymer composition includes a plastomer. In other embodiments, the polymer composition further includes at least about 10% by weight of a plastomer. In another embodiment, the polymer composition includes polypropylene and a plastomer.

In one embodiment, the process further includes preparing the
25 polymer composition by combining from about 75% by weight to about 90% by weight plastomer and from about 10% by weight to about 25% by weight polypropylene.

30 In other aspects, the invention features a process of manufacturing an oral brush that includes injecting a polymer composition having a melt flow rate of at least about 10 g/10 min into a mold cavity defining at least a portion of an oral brush body, the mold cavity that includes a plurality of bristles.

The oral brushes of the present invention are flexible and do not

- 3 -

break when brushing forces are exerted on the head portion of the brush. In particular, the oral brushes do not break when flexed in a forward direction or a reverse direction. The brushes can also be returned to their original form after having been bent with this force.

5 The present invention enables the manufacture of brush bodies having relatively narrow regions that exhibit excellent resistance to breakage and remain flexible, yet are sufficiently rigid so as to provide a structure suitable for its intended purpose. In addition, because the brush bodies can be molded rapidly due to the minimal set time in the injection molding operation, excellent rates of
10 production and manufacturing efficiencies are achieved.

Other features and advantages of the invention will become apparent from the following description of the preferred embodiments thereof, and from the claims.

Brief Description of the Drawing

15 Fig. 1 is a side view of a toothbrush.

Fig. 2 is a top view of the toothbrush of Fig. 1.

Fig. 3 is a photograph of a toothbrush positioned in a test fixture of an Instron test apparatus taken from the front side of the Instron test apparatus.

20 Fig. 4 is a photograph of the front of the Instron test apparatus of Fig. 3.

Referring to Fig. 1, toothbrush 10 includes a body 12 that includes a handle 14, a head 16, a neck 18 between the handle and the head 16 and a thumb grip 19. Tufts 20, which include at least one bristle 22, extend from head 16 of body 12. The body can include a base, e.g., made from a relatively harder, more
25 rigid plastic such as polypropylene, and a grip, e.g., made from a relatively rubbery material such as, e.g., styrene-ethylene-butadiene-styrene block copolymer.

The toothbrush body exhibits a tensile strength of at least about 3100 psi, more preferably from about 3700 psi to about 6000 psi as measured according to ASTM D638. At least a portion of the toothbrush body (e.g., the base) includes
30 a polymer composition that exhibits a melt flow rate of at least about 10 g/10 min, preferably from about 10 g/10 min to about 40 g/10 min, more preferably from about 12 g/10 min to about 35 g/10 min, most preferably from about 15 g/10 min to

about 30 g/10 min as measured according to ASTM D1238-95. In some embodiments, at least a portion of the toothbrush body includes a polymer composition that exhibits a melt flow rate of from about 30 g/10 min to about 40 g/10 min.

5 The toothbrush body is sufficiently stiff such that it can be bent without breaking. A number of properties of the brush, when taken in combination, provide a picture of the ability of the brush body to bend, yet resist breakage.

 One property is the maximum displacement exhibited by the brush body in the forward and reverse directions. The maximum displacement is the
10 maximum distance the specimen deflected during the test. Preferably, the brush body exhibits a forward maximum displacement of at least 3 inch, and a reverse maximum displacement of at least about 2.7 in. when measured according to the Maximum Displacement Test Method below.

 A second property is the stiffness of the brush body, which can be
15 measured by the amount of forward and reverse maximum load a brush body can withstand. The forward maximum load refers to the maximum amount of force applied to the brush body from the bristle surface of the brush body. Preferably the brush exhibits a forward maximum load to break of at least about 8.0 lbs of force, more preferably from about 9.0 lbs of force to about 12.0 lbs of force, and a reverse
20 maximum load to break of at least about 8.0 lbs of force, more preferably from about 8.0 lbs of force to about 11.0 lbs of force when measured according to the Maximum Load Test Method below.

 A third property of the brush is energy to break the brush body as tested in forward and reverse directions. Preferably the brush body exhibits a
25 forward maximum energy to break of at least about 21 lbs-in, more preferably at least about 23 lbs-in, and a reverse maximum energy to break of at least about 23 lbs-in, when measured according to the Energy to Break Test Method set forth below.

 A fourth property is the toughness of the brush body in the forward
30 and reverse directions. Preferably the brush body exhibits a toughness of at least about 40 in-lbs/in³, more preferably at least about 44 in-lbs/in³, in the forward direction and a toughness of at least about 40 in-lbs/in³, more preferably at least

about 45 in-lbs/in³, in the reverse direction when calculated according to the Toughness Test Method set forth below.

The above properties preferably exist in toothbrush bodies in which the thumb grip region of the toothbrush body has a cross-sectional area no greater than 1.8 cm, preferably no greater than 1.1 cm, most preferably no greater than 1 cm.

The polymer composition of the toothbrush body includes polypropylene. Polypropylene exists in a variety of forms, each of which exhibits a variety of properties. Preferably the body includes a polypropylene known as a controlled rheology polypropylene, and has a melt flow rate of no greater than 40 g/10 min, more preferably no greater than 30 g/10 min, and a tensile strength of at least about 3100 psi, more preferably from about 4,000 psi and 6,000 psi, most preferably at least about 4,700 psi.

Preferably the polypropylene is formulated to harden rapidly after being injected into a mold cavity. The ability to harden is referred to as "set time." Preferably the set time is sufficiently short so as to permit maximum utilization of the injection molding equipment.

Preferred polypropylene is at least about 97% isotactic polypropylene. Suitable polypropylene is available under the trade designations FINA 3824 and FINA 3825 from Fina Oil and Chemical Company (Dallas, Texas), and PP1105 from Exxon Chemical (Houston, Texas).

The polymer composition can include up to 100% by weight polypropylene. Preferably the polypropylene is present in the polymer composition in an amount of from about 75% by weight to about 90% by weight, most preferably about 85% by weight. The polypropylene preferably has a narrow molecular weight range.

The polypropylene also includes a catalyst that controls the length of the polymer chain so as to produce a narrow molecular weight range of polymer. This is referred to as a controlled rheology polypropylene. Preferred catalysts also promote rapid hardening of the polypropylene after it has been injected into a mold cavity. Examples of useful catalysts include Ziegler-Natta catalysts, and Ziegler-Natta-type catalysts.

The polymer composition of the toothbrush body can also include a plastomer. Plastomers have properties that are generally intermediate to those of thermoplastic materials and elastomeric materials. Preferably the plastomer modifies the impact properties (i.e., the reaction to a force) of the polypropylene and toothbrush bodies made therefrom. Preferred plastomers exhibit a melt flow rate of from about 1 g/10 min to about 5 g/10 min, more preferably from about 1.3 g/10 min to about 5.2 g/10 min, and a tensile strength of from about 1500 psi to about 3000 psi, more preferably about 2500 psi.

Examples of useful plastomers include copolymers of ethylene and alpha-olefins, e.g., C₃ to C₂₀ alpha-olefin. Suitable commercial plastomers are available under the trade designation Exact 4033 from Exxon Chemical.

When plastomer is present in the polymer composition of the toothbrush body, it is present in an amount of at least about 2% by weight, preferably from about 2% by weight to about 30% by weight, more preferably from about 10% by weight to about 25% by weight, most preferably about 15% by weight based on the weight of the polymer composition.

The polymer composition of the toothbrush body may also include an ethylene-alpha olefin interpolmer. Preferred ethylene-alpha olefin interpolymers exhibit a melt flow rate of from about 1 g/10 min to about 5 g/10 min, more preferably about 5 g/10 min, and a tensile strength of from about 1500 psi to about 3000 psi, more preferably about 1700 psi. Examples of commercially available ethylene-alpha olefin interpolymers are available under the FLEXOMER trade designation from Union Carbide (Danbury, Connecticut), e.g., FLEXOMER POLYOLEFIN DFDB-1085 Natural.

When an ethylene-alpha olefin interpolmer is present in the polymer composition of the toothbrush body, it is present in an amount of at least about 2% by weight, preferably from about 2% by weight to about 30% by weight, more preferably from about 10% by weight to about 25% by weight, most preferably about 15% by weight based on the weight of the polymer composition.

Preferably the portion of the toothbrush body that includes the polymer composition is stable to ultraviolet (UV) light such that the body is free from discoloration due UV light over the useful life of the toothbrush.

The polymer composition of the toothbrush body can also include a variety of other components including calcium carbonate, antioxidant, pigment (e.g., titanium dioxide), dye, UV brighteners, and combinations thereof.

The invention will now be described further by way of the following examples.

EXAMPLES

Test Procedures

Test procedures used in the examples include the following.

Maximum Displacement

Maximum displacement in the forward and reverse direction is determined as follows.

The width and thickness of the brush body at the thumb grip of the brush body is measured and recorded. The thumb grip is the fulcrum, or point about which the free portion of the brush body rotates when a force is applied to the brush body by the Instron test apparatus. The width of the brush body (the width as determined from the top view (i.e., bristle surface) see Fig. 2) at the fulcrum of the brush body (e.g., along line A-A') is measured and recorded. The thickness of the brush body as viewed from the side of the brush body (see Fig. 1) is measured at the fulcrum (e.g., along line B-B') and recorded. The width and thickness values are input into an Instron Model 4301 test apparatus (Instron, Canton, Massachusetts).

The handle of the brush body is inserted in the Instron test fixture, which is attached to the Instron test apparatus, as shown in Figs. 3 and 4. To measure maximum displacement in the forward direction the handle is inserted into the test fixture such that the bristles face upward in the direction of the load to be applied. To measure maximum displacement in the reverse direction the handle is inserted into the test fixture such that the bristles face downward, away from the load to be applied.

The handle backstop is adjusted such that the distance from the front edge of the test fixture to the tip of the brush head is 61 mm. The tip of the brush body is centered directly beneath the load cell, as shown in Fig. 3. A force is applied in a perpendicular direction to the longitudinal direction of the brush body

at a cross-head speed of 0.5 in/min. The initial settings on the Instron test apparatus are as followings: initial load -0.5 lbs and initial extension -0.125. The Instron test cycle is then run. A force is applied to the brush body until the brush body either breaks or reaches a bend angle of 90°. The distance the grip of the Instron test apparatus travels in the vertical direction to achieve a 90° bend in the brush body is read from the display of the Instron test apparatus and is recorded as the maximum displacement (in).

Maximum Load

The maximum load exerted on the brush body when bent to 90° (i.e., when maximum displacement is achieved) is read from the display of the Instron test apparatus and recorded. This value is recorded as the maximum load (in lbs). If the body breaks prior to bending 90°, the fact of breakage is recorded.

Break

Break is assessed by observing whether or not the brush body breaks during the Maximum Displacement Test.

Energy to Break

Energy to break (E_b) of the brush body in the forward and reverse direction is determined by calculating the area under the force vs. displacement curve. The energy to break is read from the display of the Instron test apparatus and is recorded in lbs-in.

Toughness

Toughness (T) of the brush body in the forward and reverse direction is calculated by dividing the energy to break (E_b) by the volume of the specimen according to the following equation

$$T = E_b / (L * b * a)$$

where E_b is the energy to break, L is the gauge length, a is the width of the specimen, and b is the thickness of the specimen.

Toughness is recorded in in-lbs/in².

Polymer Composition Preparation

30 EXAMPLE 1

Fina 3824 controlled rheology polypropylene (FINA-PP) (Fina Oil & Chemical Co.) having a melt flow rate of 30 g/10 min and a tensile strength of

4700 psi, and ethylene-based plastomer (EXXON-PP1) (Exxon Chemical) having a melt flow rate of 5.2 g/10 min and a tensile strength of 1700 were mixed together at a temperature of 400°F to form a polymer composition that included 80% by weight FINA-PP and 20% EXXON-PP1.

EXAMPLE 2

A polymer composition was prepared according to Example 1 with the exception that the ratio FINA-PP/EXXON-PP1 was 75/25.

EXAMPLE 3

10 FINA-PP and EXACT 4033 ethylene-based plastomer (EXACT 4033) (Exxon Chemical) having a melt flow rate of 1.3 g/10 min and a tensile strength of 2500 were mixed together to form a polymer composition that included 85% by weight FINA-PP and 15% by weight EXACT 4033.

EXAMPLES 4-8

A polymer composition was prepared according to Example 3 with the exception that the FINA-PP/EXACT 4033 ratio was as follows: 80/20 (Example 4); 75/25 (Example 5); 85/15 (Example 6); 80/20 (Example 7); 75/25 (Example 8).

EXAMPLE 9

FINA-PP, EXACT 4033, and calcium carbonate, were mixed together to form a polymer composition that included 85% by weight FINA-PP, 15% by weight EXACT 4033, and 10% by weight calcium carbonate.

EXAMPLE 10

FINA-PP and FLEXOMER POLYOLEFIN DFDB-1085 Natural polyolefin (FLEXOMER) (Union Carbide) having a melt flow rate of 5 g/10 min, and a tensile strength of 3000, were mixed together to form a polymer composition that included 85% by weight FINA-PP and 15% by weight FLEXOMER.

EXAMPLE 11

A polymer composition was prepared according to Example 10 with the exception that the ratio of FINA-PP/FLEXOMER was 75/25.

30 The polymer compositions of Examples 1-11 were injection molded
into a into a mold cavity at 200°C. The mold cavity defined a toothbrush body
having a thumb grip having a cross-sectional area of 1 cm. A reciprocating

screw injection molding machine having a shot capacity of 150 grams injected the materials at temperatures between 190°C and 250°C.

Each of the molded toothbrush bodies was then tested, in the forward and reverse directions where appropriate, according to the Maximum Displacement
5 Test Method. Maximum Load, Energy to Break, and Toughness were also calculated. It was also noted if breakage occurred during the Maximum Displacement test method. Toothbrush bodies that broke are identified with a "yes", and those toothbrush bodies that did not break are identified with a "No".

The results are reported in Table 1.

TABLE 1

Example	Composition % by weight	Break Forward	Break Reverse	Tensile Strength	Max Load (lbs) (Forward)	Max Load (lbs) (Reverse)	Max Displacement (in) (Forward)	Max Displacement (in) (Reverse)	Energy to break (lbs-in) (Forward)	Energy to break (lbs-in) (Reverse)	Toughness (in-lbs/in) (Forward)	Toughness (in-lbs/in) (Reverse)
1	80 ¹ /20 ²	No	No	3687	9.800	8.972	3.055	3.054	21.551	22.942	41.332	44.000
2	75 ¹ /25 ³	No	No	3567	10.604	10.242	3.055	3.054	22.364	25.160	46.107	51.872
3	85 ¹ /15 ³	No	No	3800	11.243	10.368	3.055	3.055	27.042	28.427	55.752	58.607
4	80 ¹ /20 ²	No	No	3484	10.121	9.433	3.055	3.054	21.953	23.255	45.260	47.945
5	75 ¹ /25 ³	No	No	3324	9.577	8.826	3.055	3.054	22.923	23.807	47.260	49.082
6	85 ¹ /15 ³	No	No	3271	10.528	9.704	3.055	3.054	24.797	26.274	51.124	54.169
7	80 ¹ /20 ²	No	No	3133	9.831	9.124	3.054	3.054	23.217	24.583	47.866	50.683
8	75 ¹ /25 ³	No	No	2878	9.248	8.452	3.054	3.054	21.770	22.665	44.882	46.727
9	75 ¹ /15 ³ /10 ⁴	No	No	3611	10.348	9.717	3.054	3.055	22.607	24.119	46.609	49.726
10	85 ¹ /15 ³	No	No	3494	11.491	9.539	3.055	2.794	28.375	27.177	58.501	56.031
11	75 ¹ /25 ³	No	No	3123	9.574	9.493	3.055	3.055	23.308	23.466	48.054	48.380

- 1 = Fina polypropylene
2 = Exxon-PP1 polypropylene
3 = Exact 4033 polypropylene
4 = Calcium carbonate
5 = Flexomer

Other embodiments are within the claims.

CLAIMS

1. An oral brush comprising:
a body comprising a polymer composition that comprises polypropylene, said polymer composition having a melt flow rate of at least about
5 10 g/10 min; and
bristles extending from said body.
2. The oral brush of claim 1, wherein said body has a tensile strength of at least about 3100 psi.
3. The oral brush of claim 1, wherein said body has a tensile strength of
10 at least about 3700 psi.
4. The oral brush of claim 1, wherein said body has a tensile strength of from about 3700 psi to about 6,000 psi.
5. The oral brush of claim 1, wherein said body defines a shape comprising a handle and a head extending from said handle, said handle comprising
15 a thumb grip having a cross-sectional area no greater than about 1.8 cm².
6. The oral brush of claim 1, wherein said body defines a shape comprising a handle and a head extending from said handle, said handle having a cross-sectional area no greater than about 1 cm².
7. The oral brush of claim 1, wherein said polymer composition has a
20 melt flow rate of from about 10 g/10 min to about 40 g/10 min.
8. The oral brush of claim 1, wherein said polymer composition has a melt flow rate of from about 15 g/10 min. to about 30 g/10 min.
9. The oral brush of claim 1, wherein said polypropylene has a melt flow rate of in the range of from about 30 g/10 min to about 40 g/10 min.
- 25 10. The oral brush of claim 1, wherein said polypropylene has a tensile strength of from about 4000 psi to about 6000 psi.
11. The oral brush of claim 1, wherein said polymer composition further comprises a plastomer.
12. The oral brush of claim 11, wherein said plastomer has a melt-flow
30 rate of from about 1.3 g/10 min to about 5.2 g/10 min.
13. The oral brush of claim 11, wherein said plastomer has a tensile strength of from about 1500 to about 3000 psi.

- 49
14. The oral brush of claim 11, wherein said plastomer comprises a copolymer comprising ethylene and a polyalpha-olefin.
15. The oral brush of claim 11, wherein said polymer composition comprises from about 2% by weight to about 30% by weight plastomer.
- 5 16. The oral brush of claim 11, wherein said polymer composition comprises from about 10% by weight to about 20% by weight plastomer.
17. The oral brush of claim 11, wherein said polymer composition comprises
- from about 75% by weight to about 90% by weight of said
- 10 polypropylene; and
- from about 10% by weight to about 25% by weight of said plastomer.
18. An oral brush body comprising:
- a handle; and
- 15 a head extending from said handle,
- said body comprising a polymer composition that comprises polypropylene, said polymer composition having a melt flow rate of at least about 10 g/10 min.
19. The oral brush of claim 18, wherein said handle further comprises a
- 20 thumb grip having a cross-sectional area of no greater than 1.8 cm², wherein said body exhibits a maximum load of at least about 8 lbs.
20. A process of manufacturing an oral brush body comprising:
- injecting a polymer composition having a melt flow rate of at least 10 g/10 min into a mold cavity to form a body of the oral brush.
- 25 21. The process of claim 20, wherein said polymer composition comprises polypropylene.
22. The process of claim 20, wherein said polymer composition comprises a plastomer.
23. The process of claim 20, wherein said polymer composition further
- 30 comprises at least about 10% by weight of a plastomer.
24. The process of claim 20, wherein said polymer composition comprises polypropylene and a plastomer.

- 15 -

25. The process of claim 20, further comprising preparing said polymer composition, said preparing comprising

combining from about 75% by weight to about 90% by weight
plastomer, and

5 from about 10% by weight to about 25% by weight polypropylene.

26. A process of manufacturing an oral brush comprising injecting a polymer composition having a melt flow rate of at least about 10 g/10 min into a mold cavity defining at least a portion of an oral brush body, said mold cavity comprising a plurality of bristles.

FIG. 2

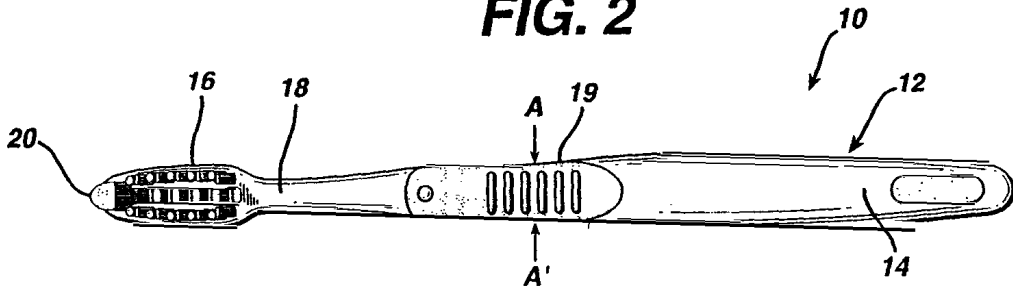


FIG. 1

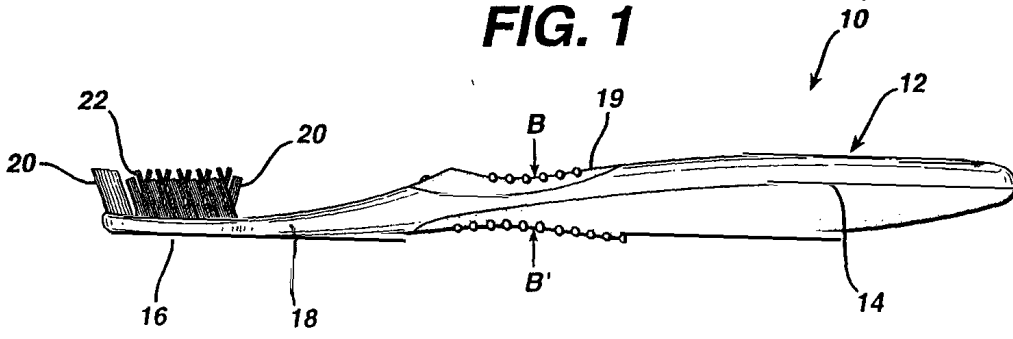


FIG. 3

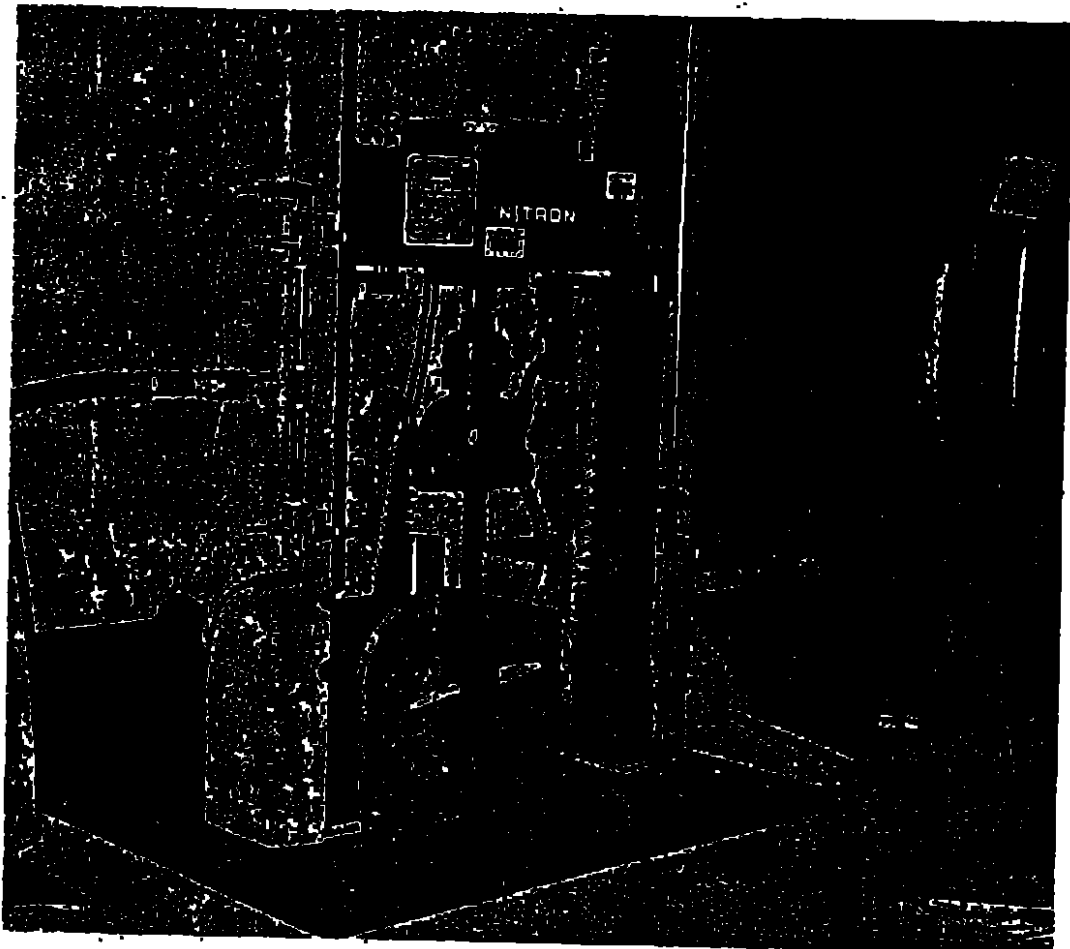


FIG. 4

INTERNATIONAL SEARCH REPORT

Intern. of Application No

PCT/US 00/22997

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A46B5/00

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)

IPC 7 A46B A46D

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 practical, search terms used)

WPI Data, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 691 404 A (TARRSON EMANUEL B ET AL) 8 September 1987 (1987-09-08)	1-4, 6, 7, 10, 18, 20, 21, 26
Y	column 3, line 52 - column 5, line 32	5, 8-17, 19, 22-25
Y	US 5 398 369 A (HEINZELMAN BERT D ET AL) 21 March 1995 (1995-03-21) abstract; figures	5, 19
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	-/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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

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"Z" document member of the same patent family

Date of the actual completion of the international search

2 November 2000

Date of mailing of the international search report

13/11/2000

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INTERNATIONAL SEARCH REPORT

Int. Application No
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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Form PCT/ISA/210 (patent family annex) (July 1999)

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OUR REF : PT-1741A/03

YOUR REF :

July 1, 2003

Messrs.
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Re: International Preliminary Examination for PCT Application No.: PCT/BR02/00170
International Filing Date: December 4, 2002
Applicant: JOHNSON & JOHNSON INDUSTRIAL LTDA
Title: "TOOTHBRUSH"
PCT Easy ref.: 2074-5003

Dear Sirs,

The applicant respectfully requests the IPEA/EP to conduct a detailed examination of the International Application which is the subject of this DEMAND under Article 31 of the PCT, including the issuance of a considered Written Opinion, and providing Applicant with an opportunity and ample time to respond to any negative opinions contained therein.

Very truly yours,


Antonio M.P. Arnaud.

AMPA/lo

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November 14, 2003

OUR REF : PT-3091/03

YOUR REF :

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 EUROPEAN PATENT OFFICE
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BY FAX
 Confirmation copy will follow

Re: International Application nº PCT/BR02/00170
 Applicant: JOHNSON & JOHNSON INDÚSTRIA E COMÉRCIO LTDA.

Dear Sirs,

In response to the Written Opinion issued on September 09, 2003, we have the following comments:

1. According to our analysis, US'116 construction presents some differences in relation to the present invention, since said prior art provides a toothbrush with an elongated handle portion with a feature to fit five separate fingers (col. 4 lines 48 to 52), each one in a respective notch, in order to prevent slippage. Said elongate handle portion presents an end portion opposite to that provided with the cleansing head portion (17) thinner than that of Johnson's solution. In view of its design, US'116 solution does not allow a comfortable handle of the toothbrush sided with the bristles turned away from the user.

2- Johnson's solution presents a handle (30) construction in which only some finger's portions are defined in order to allow the comfortable and secured gripping of the toothbrush with the bristles turned to and turned away from the user. To obtain said both gripped conditions with the toothbrush it is necessary to define support regions to the thumb, to the little finger and to the ring finger along the elongated handle. Said characteristics are defined in claim 1 of the present solution and are not anticipated by the prior art solution.

3.- In view of the facts discussed above, we understand that the claim set should be kept as originally filed. Formal objections will be handled during the national phases if required.

Respectfully submitted,

Antonio M. P. Arnaud.

AMPA/vk

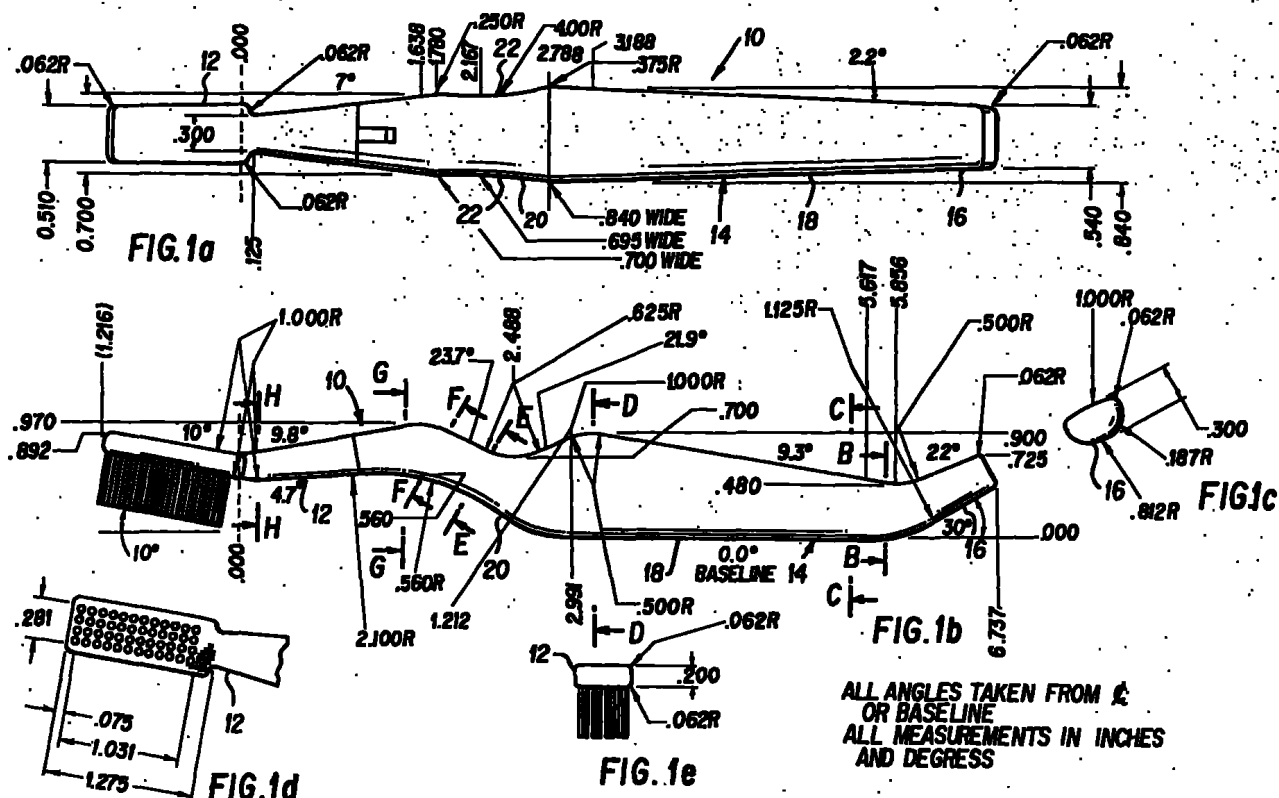


FIG. 2a

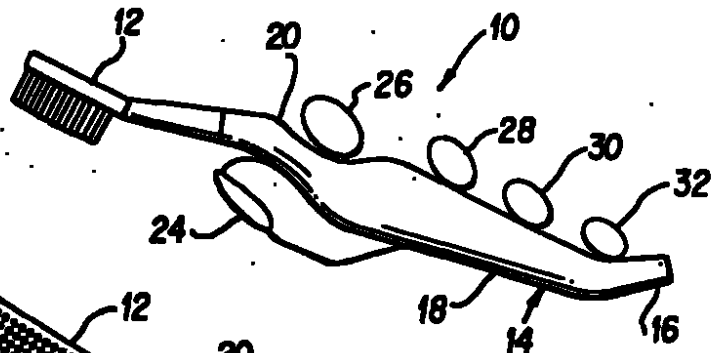


FIG. 2b

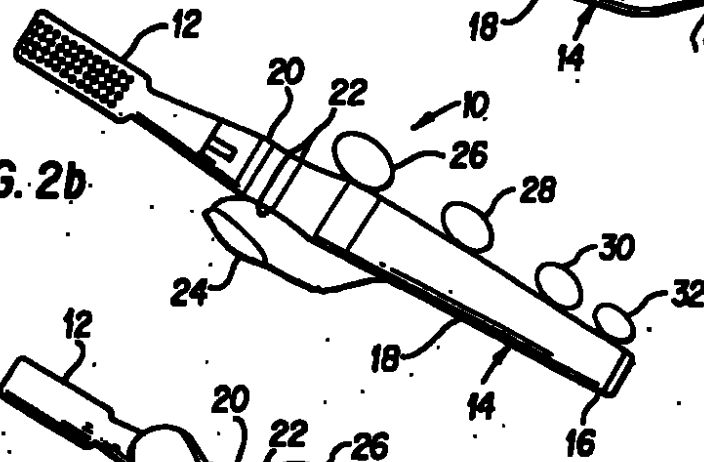


FIG. 2c

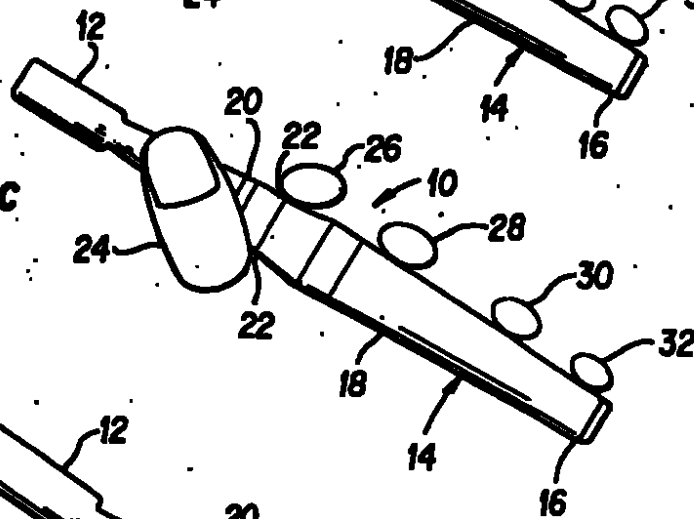
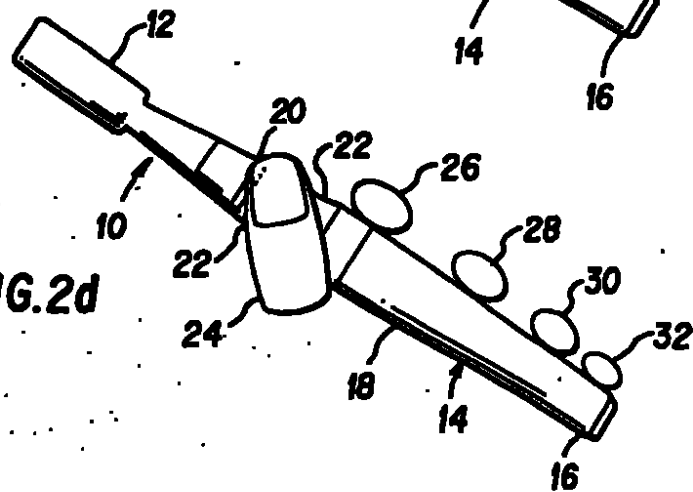
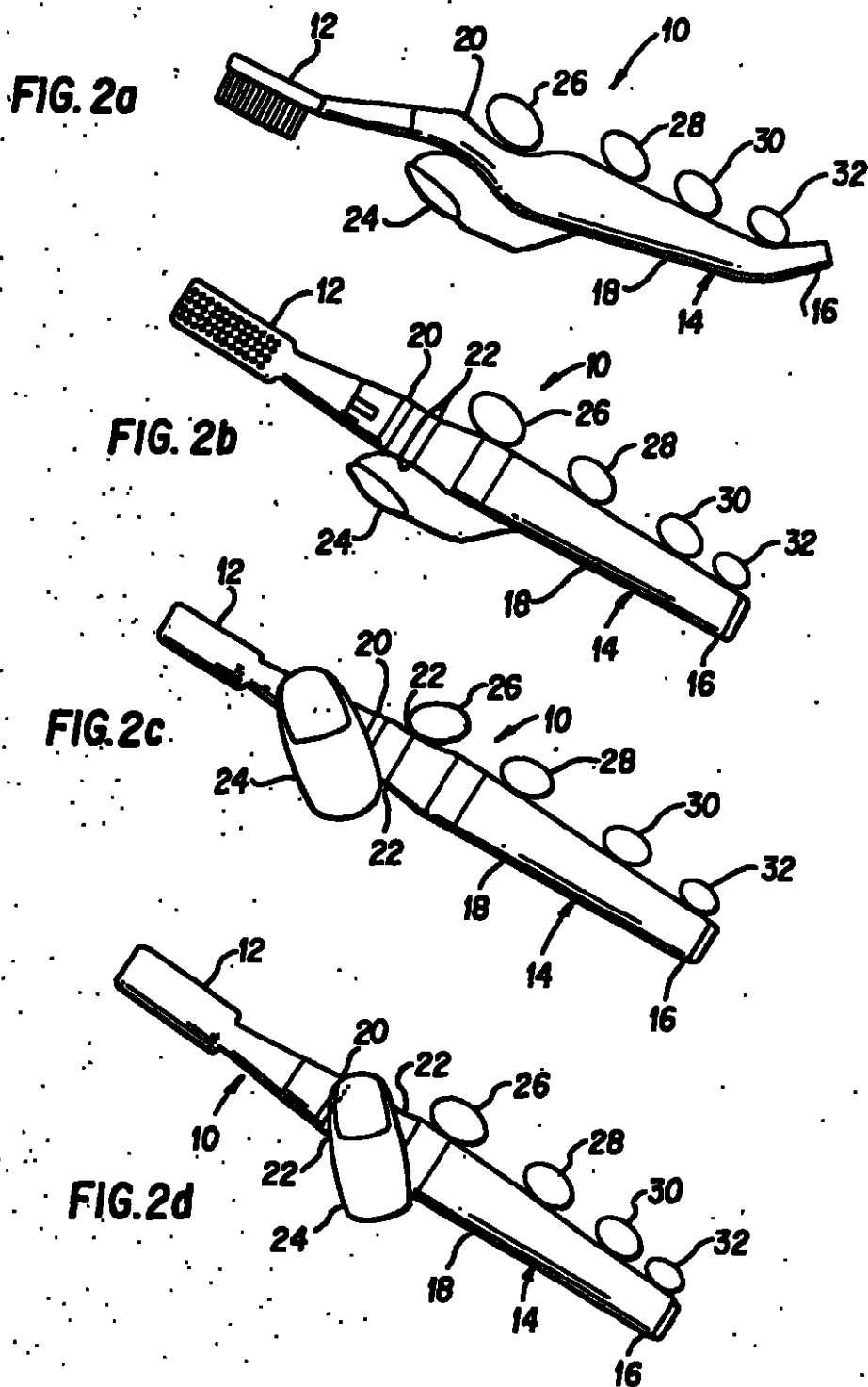


FIG. 2d





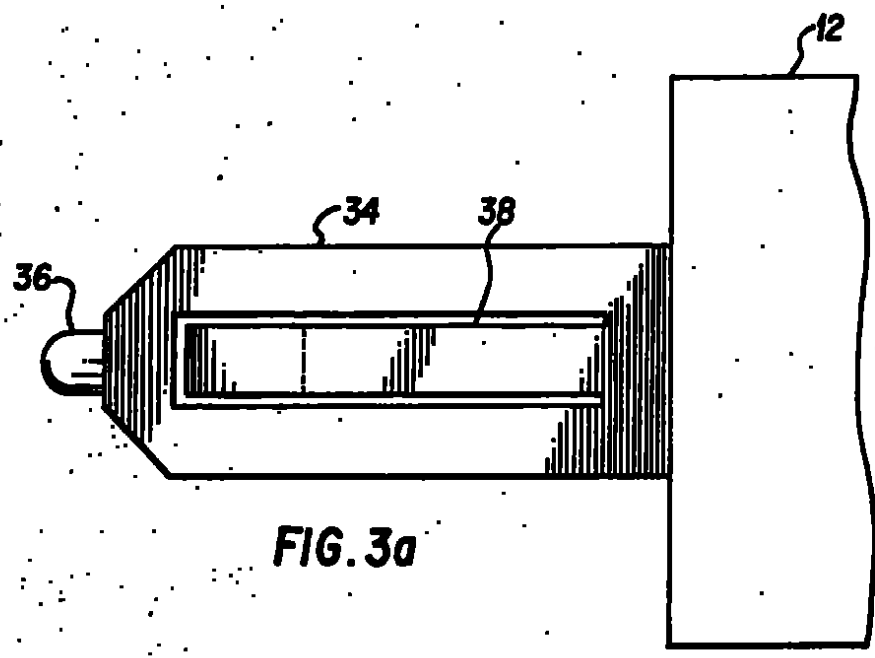


FIG. 3a

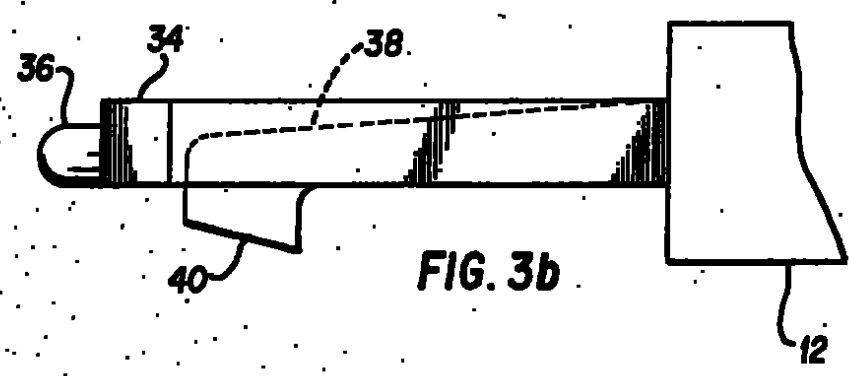


FIG. 3b

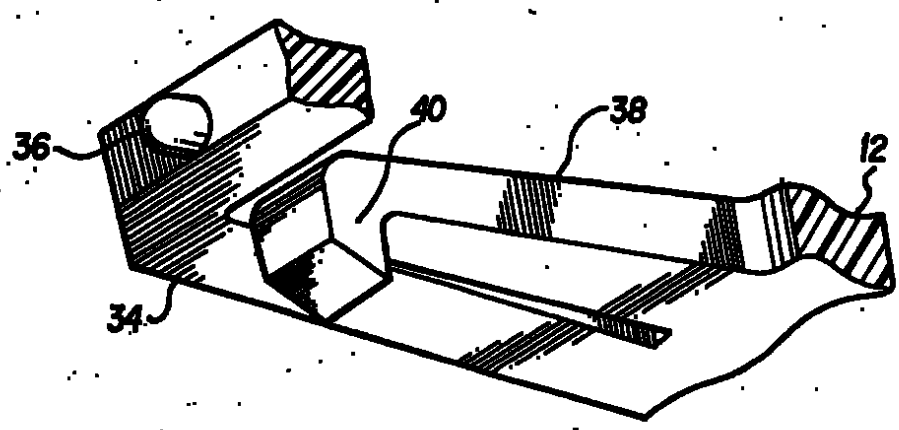
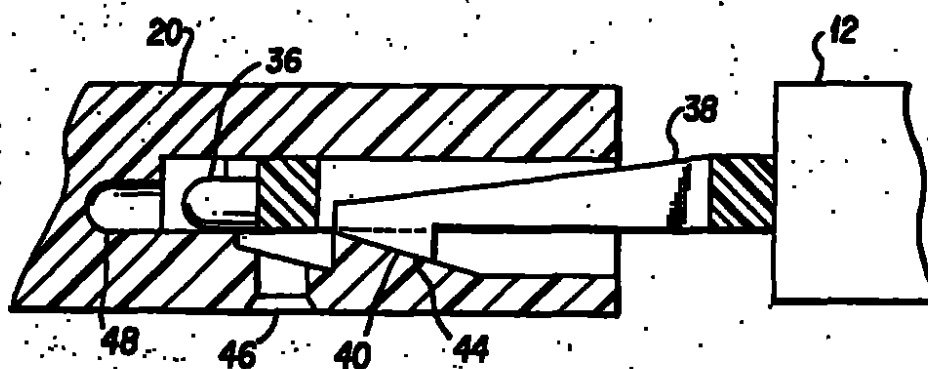
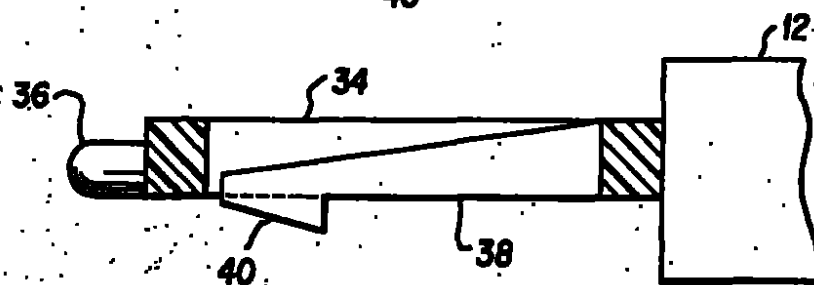
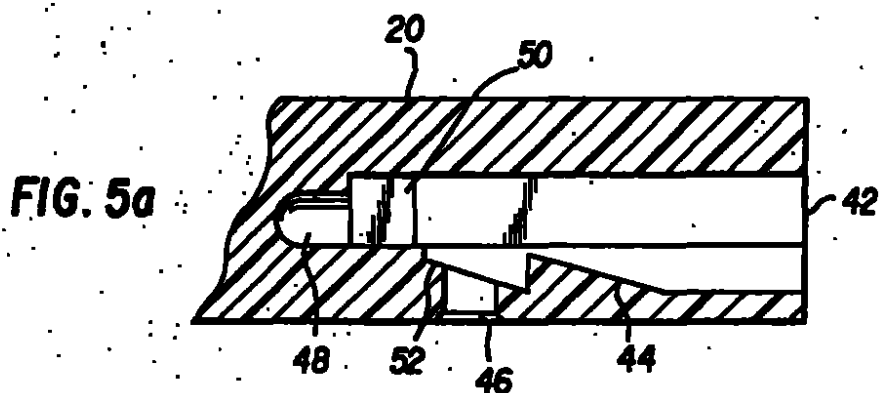
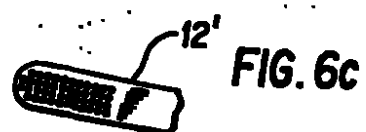
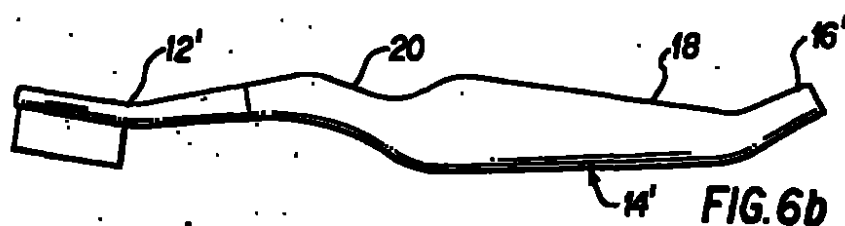
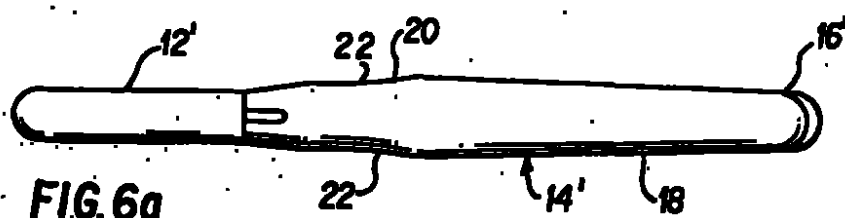
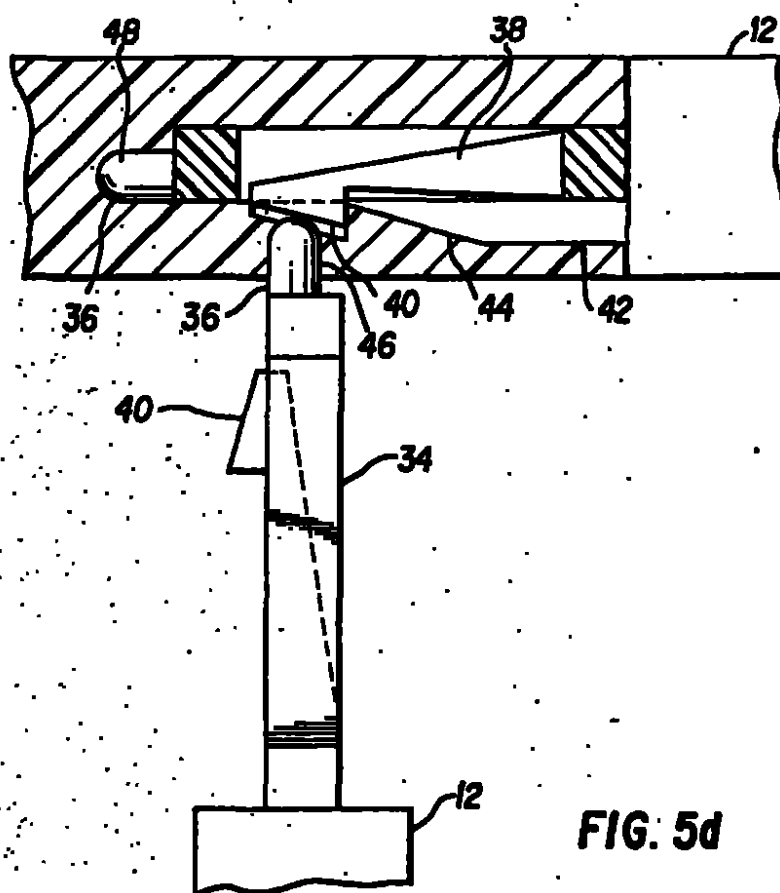


FIG. 4





TOOTH BRUSH WITH REMOVABLE BRUSH HEAD

BACKGROUND OF THE INVENTION

The present invention relates to tooth brushes having a handle to allow the user to have positive control of the brushing action while being used with either the right or the left hand, and more particularly to tooth brushes having a replaceable brush head when the bristles have worn down.

The prior art includes numerous tooth brushes with various bristle orientations, head angles, and other appliances attached to the handle of the tooth brush. Additionally, there is a tooth brush sold under the name "RADIUS" that has a handle that is shaped to provide positive control of the use of the brush, however, the handle design of that brush is such that there is a right hand model and a left hand model. The bristle layout of this brush is in the shape of an oval which does not provide a good cleaning action when the brush is used. Further, no tooth brush is known to have a replaceable head.

It would be desirable to have a tooth brush that provides for positive control of the brushing action by means of a handle that is designed to be comfortably held by the user in any way that suits him regardless of which hand he uses. In addition, it would be desirable to have replaceable heads for the tooth brush to minimize disease transmission and the cost of the brush to the consumer. The present invention provides such a tooth brush design.

SUMMARY OF THE INVENTION

In accordance with the illustrated embodiments, the present invention provides a tooth brush with a handle portion affixed thereto, and a latch mechanism to affix two items to each other. The tooth brush includes a handle portion with a main body region, a tail region and an "S" shaped region. The main body region is substantially rectangular in shape with a length that is several times longer than either its height or width. In addition, the main body region defines a top, a bottom and two side surfaces. The tail region is affixed to one end of the main body region and angled upward through a selected angle with the top surface of the main body region. The "S" shaped region is affixed to the other end of the main body region with an upper and a lower curved indentation to form the "S". The surfaces of the "S" shaped region that form the "S" are extensions of the top and bottom surfaces of the main body region. Finally, the head portion is affixed to the distal end of the "S" shaped region, with the head portion having bristles affixed thereto in a selected pattern.

The latching mechanism for affixing a first item to a second item includes a male latching portion affixed to the first item, and a cavity defined within the second item disposed to receive the male latching portion on the first item. The male latching portion includes a "U" shaped body with the top of each leg of the "U" being affixed to, and extending outward from, the surface of the end of the first item that is to abut the surface of the end of the second item when the first item is affixed to the second item. The male latching portion also includes a spring finger having one end thereof affixed to the same surface to which the legs of the "U" shaped

body are affixed and extends outward therefrom between the legs of the "U" shaped body. The spring finger has at its other end a locking tooth that extends outward from between the legs of the "U" shaped body.

BRIEF DESCRIPTION OF THE FIGURES

FIGS. 1a-e show several plan views of a first embodiment of the tooth brush of the present invention including top, side, both ends, and bristle format views.

FIG. 1f shows the cross-sectional shapes of the handle and brush head of the tooth brush of FIGS. 1a-e.

FIGS. 2a-d show several ways that the tooth brush of the present invention can be held by the user.

FIGS. 3a and b show a top and side views, respectively, of the male latch portion affixed to the brush head of the present invention.

FIG. 4 shows a partial cut-away perspective view of the male latch portion affixed to the brush head of the present invention.

FIG. 5a shows in a cross-sectional side plan view the cavity into which the male latch portion is received by the end of the handle of the present invention.

FIG. 5b shows a cross-sectioned side plan view of the male latch portion of FIGS. 3a-b and 4.

FIG. 5c shows the male latch portion partially inserted into the cavity of FIG. 5a by means of a cross-sectioned side plan view.

FIG. 5d shows by means of a partial cross-section side plan view the male latch portion fully inserted into the cavity of FIG. 5a and the tip of the male latch portion of another brush head in position to release the captured male latch portion.

FIGS. 6a-c show a top and side plan views, and a bottom plan view of the bristle side of the head portion, of a second embodiment of the tooth brush of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is an ergonomically designed tooth brush which provides positive control during brushing while being comfortable to grasp in numerous ways with either hand. In addition, the head is designed to be removable when the bristles wear down to minimize the replacement cost of the brush.

Referring to FIGS. 1a-e there are shown several views of the tooth brush 10 of a first embodiment of the present invention, and in FIG. 1f there are shown the cross-sectional shapes of the handle and head at several points along its length. From these views it can be seen that the handle is a bent trapezoid which is substantially rectangular in cross-section throughout its length. To improve the comfort when the handle is grasped, the corners of the surface of the handle, both radially and axially, are rounded.

Tooth brush 10 has a head portion 12 and a handle portion 14. Head 12 is removably affixed to handle portion 14 to permit the replacement of head portion 12 when the bristles are worn or bacterially infected. Additionally, handle portion 14 has three regions: a main body region 18, a tail region 16 and an "S" shaped region 20. As shown, the head portion 12 attaches to proximate end of the "S" shaped region 20 of the handle portion, which is next followed by the main body region 18 and then the tail region 16. From FIG. 1b it can be seen that the radius of curvature of the bristle side of the "S" shaped region 20 is approximately 3.5 times the

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3

radius of curvature of the other side of the "S" shaped region 20. Those two indentations are provided to accommodate the thumb and forefinger of the user, and it is those indentations, when the tooth brush is grasped thereby, that provide the control of the brush during usage. Also, in FIG. 1b it can be seen that the tail region 16 turns upward with respect to the bristle side of head 12, as does head 12, unlike the prior art which turns downward.

In FIG. 1a it can further be seen that the "S" shaped region 20, when viewed from the top or bottom, has a slight hour glass shape as a result of indentations 22. Indentations 22 are also provided to accommodate the thumb and forefinger of the user to control the brush in use, when so held. The main body region 18 and the tail region 16 are provided to accommodate the other three fingers of the user when the tooth brush 10 is being used. Additionally, the tail region 16 is approximately 12% of the overall length of the tooth brush 10 of the present invention and may or may not be contacted during use depending on the way that the user chooses to hold tooth 10 during use thereof.

A second embodiment of the tooth brush of the present invention is shown in FIGS. 6a-c. The differences between this embodiment and the first embodiment are only in the outline shape of the head portion 12' and tail region 16'. Head portion 12' has a rounded forward end instead of a squared off forward edge as in head portion 12. Additionally, head 12' does not neck down behind the bristles as does head portion 12. The distal end of tail region 16' is also curved instead of substantially square as in tail region 16. Otherwise tooth brush 14' is the same as tooth brush 14.

Referring next to FIGS. 2a-d there is shown four ways of holding tooth brush 10 with the right hand. For ease of viewing the accommodation of the user's fingers 26-32 and thumb 24 as they grasp the handle portion 14, only the portion of the fingers 26-32 and thumb 24 were they contact the handle portion 14 are shown. In FIG. 2a the thumb 24 and the forefinger 26 are contacting the large and small radius of curvature sections, respectively, of the "S" shaped region 20 of tooth brush 10, with the other fingers 28-32 being accommodated by the main body region 18 and tail region 16.

In FIG. 2b the thumb 24 and forefinger 26 are grasping the "S" shaped region 20 on opposite sides in indentations 22, with the other fingers 28-32 being accommodated by the main body region 18 and tail region 16.

In FIG. 2c thumb 24 is in contact with the back of "S" shaped region 20 forward of the smaller radius of curvature indentation and forefinger 26 is in contact with one of indentations 22 and extends beneath the "S" shaped region to make contact with the large radius of curvature indentation on the bottom of handle portion 14. The other fingers 28-32 are, in this view, accommodated by the side of main body region 18 and tail region 16.

In FIG. 2d thumb 24 is contacting the small radius of curvature section of the "S" shaped region 20 of tooth brush 10, with fingers 26-32 being accommodated by the main body region 18 and tail region 16.

Note, the above-described ways of grasping tooth brush 10 are presented as illustrative of the ways that it can be grasped and are not intended to be the only ways. Additionally, tooth brush 10 can be grasped by the left hand in the same ways as illustrated in each of FIGS. 2a-d. To make those figures illustrative of left

4

banded grasping of tooth brush 10, one need only make mirror images of them.

Details of the latching mechanism between the head portion 12 and the handle portion 14 are shown in FIGS. 3-5. The male latch portion is affixed to head portion 12 and the cavity for receiving same is defined in the end of the handle portion 14. FIGS. 3a-4, 4 and 5b each shows a view of the male latch portion. FIG. 5a shows details of the cavity in the end of the handle portion 14 for receiving the male latch portion, and FIGS. 5c and d illustrate the mating and the release of the latch. While the latching mechanism herein is described as being for the mounting of a removable tooth brush head to a specially design tooth brush handle, it is not intended that this latching mechanism can only be utilized for tooth brushes. The latching mechanism disclosed herein can be utilized in any situation where a firm, yet temporary, attachment is desired.

The male latch portion includes "U" shaped body 34 that has the top of each leg of the "U" attached to the end of the head portion 12 that abuts the handle portion 14 when it is mounted thereto. Within the opening of the "U" there is a spring finger 38 having one end affixed to the same surface of head portion 12 as is the "U" shaped body 34. The free end of spring finger 38 turns downward forming a locking tooth 40. The lower surface of locking tooth 40 is inclined which is shortest furthest from the attached end of spring finger 38. Additionally, affixed to the center of the "U" shaped body 34 at the furthest extent from, and extending away from, head portion 12 is a key 36.

Referring next to FIG. 3a there is shown a partial cut-away side plan view of the latch receiving cavity 42 in the end of handle portion 14. It can be seen that cavity 42 defines a space shaped to receive the male latch portion. Cavity 42 includes a ramp 44 up which the lower sloped face of locking tooth 40 advances as the male latch portion is inserted into cavity 42. When fully inserted, locking tooth 40 snaps into recess 52 when key 36 is fully seated into the distal end 48 of cavity 42. In communication with recess 52 from the lower surface of handle portion 14 is a channel 46 for use when the male latch portion is to be released from cavity 42.

In FIG. 3c the male latch portion is partially inserted into cavity 42 with key 36 in alignment with end 48 and the lower face of tooth 40 in contact with ramp 44. In FIG. 3d the male latch portion is shown fully inserted into cavity 42 with key 36 in end 48 and locking tooth 40 captured by recess 52. Additionally, FIG. 3d illustrates the method for releasing the male latch portion from cavity 42. This is accomplished by inserting key 36 of a second male latch portion into channel 46 to push locking tooth 40 inward to release it from recess 52.

From the foregoing description, it will be apparent that the invention disclosed herein provides novel and advantageous tooth brush and latching mechanism designs. As will be understood by those familiar with the art, the invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof.

What is claimed is:

1. A tooth brush comprising:
 - a handle portion in the shape of a bent trapezoid, said handle portion including:
 - a main body region substantially rectangular in shape with a length that is several times longer than either its height or width, said main body

5

- region defining a top, a bottom and two side surfaces;
- a tail region affixed to one end of the main body region angled upward through a selected angle with the top surface of the main body region; and
- an "S" shaped region affixed to the other end of the main body region with an upper and a lower curved indentation to form the "S" being on the surfaces of the "S" shaped region that are extensions of the top and bottom surfaces of the main body region; and
- a head portion affixed to the proximate end of the "S" shaped region, said head portion having bristles affixed thereto in a selected pattern.
2. A tooth brush as in claim 1 wherein the upper curved indentation of the "S" shaped region has a smaller radius of curvature than the radius of curvature of the lower curved indentation of the "S" shaped region.
3. A tooth brush as in claim 2 wherein the upper curved indentation begins closer to the main body region than the lower curved indentation, and the lower curved indentation ends closer to the head portion than the upper curved indentation.
4. A tooth brush as in claim 1 wherein the bristles on the head portion extend to the surface thereof that is an extension of the bottom surface of the main body region of the handle portion.
5. A tooth brush as in claim 1 wherein the head portion is removable from the handle portion.
6. A tooth brush as in claim 5 wherein:
- said head portion includes a male latching portion, said male latching portion having:
- a "U" shaped body, the top of each leg of the "U" being affixed to, and extending outward from, the surface of the head portion that abuts the handle portion when the head portion is affixed to the handle portion; and
- a spring finger having one end thereof affixed to the same surface to which the legs of the "U"

6

- shaped body are affixed and extends outward therefrom between the legs of the "U" shaped body, said finger also has at its other end a locking tooth that extends outward from between the legs of the "U" shaped body; and
- said handle portion includes a cavity defined within the end of the "S" shaped region shaped to receive the male latching portion of the head portion.
7. A tooth brush as in claim 6 wherein:
- said "U" shaped body further includes a key affixed to the outer surface thereof at the furthest extent from the surface to which the legs of the "U" shaped body are affixed; and
- said handle portion defines within said cavity:
- a recess disposed for receiving the locking tooth of the male latching portion to snap into when the male latching portion is fully inserted into said cavity; and
- a channel between the outer surface of the handle portion and said recess disposed to receive the key of the "U" shaped body of a head portion not mounted on the handle portion to push the locking tooth of a head portion mounted on the handle portion inward as the key is advanced into the channel to release the locking tooth from the recess within the cavity.
8. A tooth brush as in claim 6 wherein:
- the end of said locking tooth has an end surface with the edge thereof that is closest to the surface to which the legs of the "U" shaped body are affixed extends further from the side of the "U" shaped body than the other edge thereof extends; and
- said cavity of the handle portion further includes an inwardly extending upward sloping ramp disposed to mate with the end of the locking tooth as the male latching portion is inserted into, or withdrawn from said cavity with said recess located beyond said ramp within said cavity.

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United States Patent [19]
Wieder et al.

[11] **Patent Number:** 5,749,116
 [45] **Date of Patent:** May 12, 1998

[54] **TONGUE HYGIENE DEVICE**

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 484331 5/1938 United Kingdom .

[75] **Inventors:** Steven M. Wieder; Thomas A. Oechlein, both of Sarasota, Fla.

OTHER PUBLICATIONS

[73] **Assignee:** Peak Enterprises, Inc., Sarasota, Fla.

Dr. Gizmo, Forbes Magazine, 1995 FYI pp. 48 and 50.

[21] **Appl. No.:** 782,923

Primary Examiner—David Scherbel

Assistant Examiner—Terrence R. Till

[22] **Filed:** Jan. 13, 1997

Attorney, Agent, or Firm—Mayer, Brown & Platt

[51] **Int. Cl.⁶** A46B 9/02; A46B 9/06

[57] **ABSTRACT**

[52] **U.S. Cl.** 15/160; 15/167.1; 15/143.1

[58] **Field of Search** 15/143.1, 160, 15/167.1; D4/104, 111

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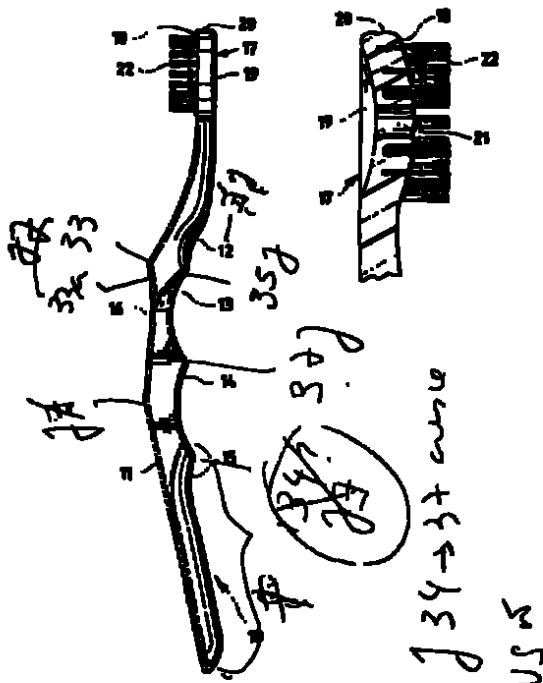
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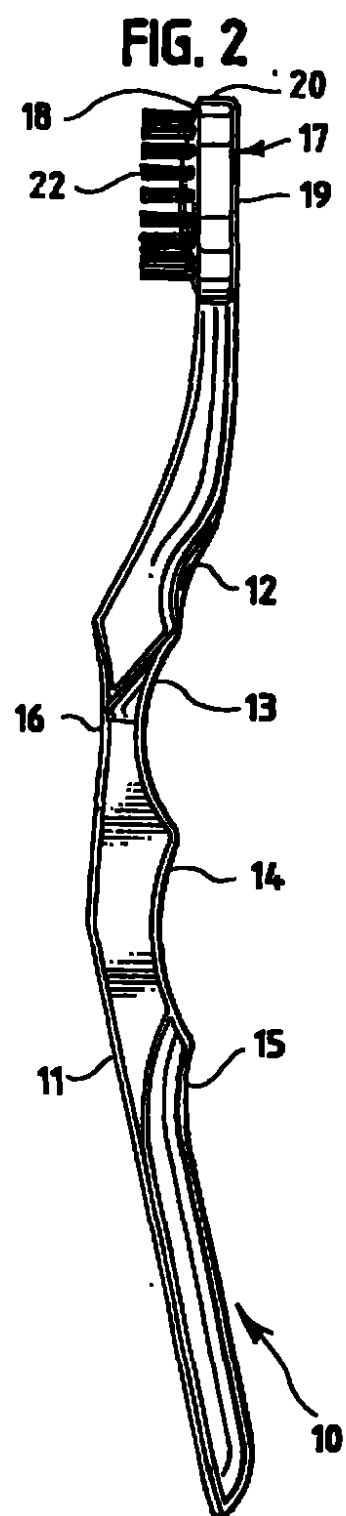
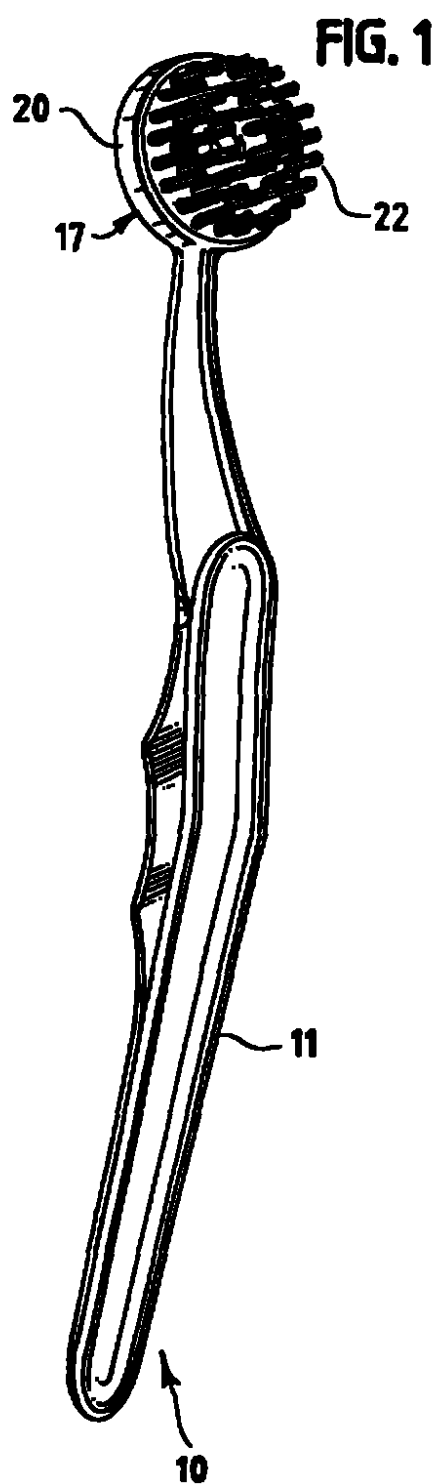
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A tongue hygiene device to be used with a mildly abrasive cleanser, the tongue hygiene device having a generally elongate handle section and a generally disk-shaped cleansing section. The handle section is ergonomically designed to allow the user to effectively and comfortably hold the tongue hygiene device in proper cleansing alignment with the tongue. The cleansing section includes three generally parallel, circular patterns of medium-length bristles of medium stiffness, protruding from a generally disk-shaped cleansing head, the cleansing head having a top face, and a bottom face from which the bristles protrude, and a large aperture extending between the centers of the bottom and top faces which is surrounded by the bristles on the bottom face. The bristles allow the tongue hygiene device to cleanse the tongue by brushing bacteria and food buildup from the tongue using a mildly abrasive cleanser. The aperture allows air and the lather formed by brushing with a cleanser to pass through the head element, thereby increasing the lather and facilitating the passage of bacteria and food buildup away from the surface of the tongue, and provides a conduit for the passage of air and water through the head element during cleaning of the tongue hygiene device, expediting and simplifying cleaning of the tongue hygiene device and hastening drying of the bristles.

10 Claims, 2 Drawing Sheets





U.S. Patent

May 12, 1998

Sheet 2 of 2

5,749,116

FIG. 3

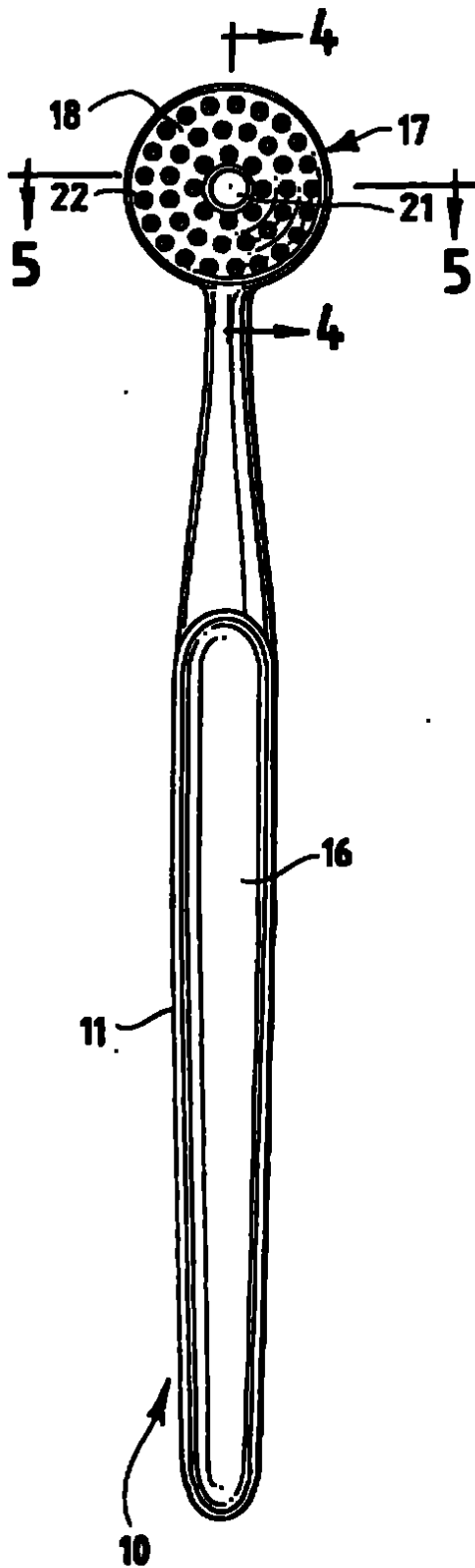


FIG. 4

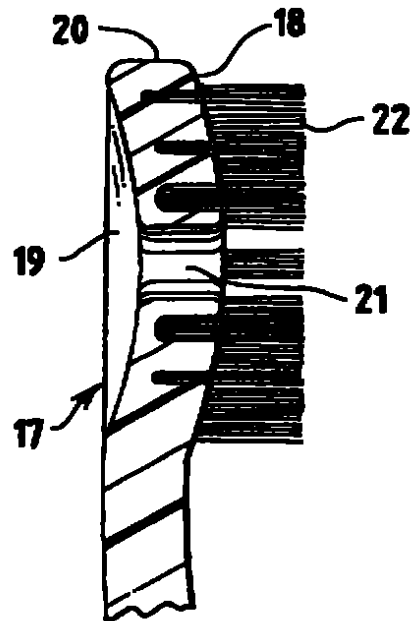
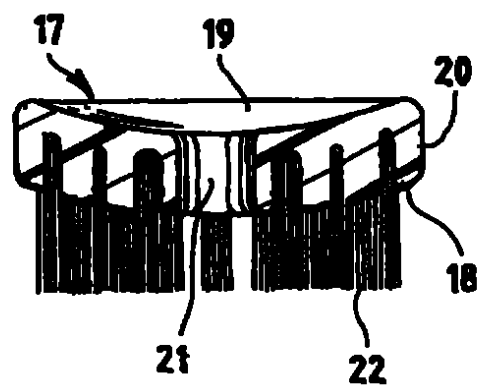


FIG. 5



TONGUE HYGIENE DEVICE

The present invention relates to a tongue hygiene device. More particularly, the present invention relates to a tongue brush which allows for convenient and effective hygienic cleansing of a user's tongue, thereby facilitating the elimination of bacteria and food buildup from the tongue.

BACKGROUND OF THE INVENTION

Oral hygiene has long been a concern in our society. Generally, individuals who have desired to improve their oral hygiene have done so by caring for their teeth, especially by brushing and flossing their teeth. Recently, however, research has revealed that the predominant source of bad breath is bacteria and food buildup on the dorsum (or top) of the tongue. Therefore, individuals who desire to prevent bad breath, and thereby improve their overall oral hygiene, should cleanse their tongues as well.

The tongue, however, being an irregularly-shaped mobile mass of striated muscle covered by mucous membrane, is not an easy surface to cleanse. While the tongue's muscular nature allows its shape to be altered quickly and extensively in performing its functions, that same muscular nature and rapid and extensive alteration of shape prevents convenient cleansing. Furthermore, the tongue has a number of large and small furrows, grooves, folds, and protrusions along its dorsum and margins (or sides), as well as microscopic projections and cavities formed by papillae and lymph follicles on the surface of the dorsum. As a result, the tongue's surface is uneven both macroscopically and microscopically. That lack of evenness makes cleansing of the tongue even more difficult.

A number of means of cleansing the tongue are known in the prior art. All of these means utilize one of two methods: brushing or scraping (or both). Means for cleansing the tongue known in the prior art include conventional toothbrushes, tongue scrapers, combination scraper-brushes, and complex brush devices. Each of those means known in the prior art, however, has significant deficiencies, either in cleansing or other defects.

Brushing is most commonly done using a mildly abrasive cleansing medium, such as toothpaste. Brushing helps remove bacteria and food buildup in two ways. First, bristles individually dislodge and extract materials from the surface being brushed by exerting a vertical and lateral pressure on those materials. Second, once materials are extracted from the surface being brushed, they are transported away from the surface being brushed by the cleansing medium, which is itself lathered and communicated by the collective agitation of bristles. In order to form lather, the tips of bristles must flex sufficiently to cause local agitation of the cleansing material. The tips of bristles must also flex to assist in the communication of the lathered cleansing medium away from the surface being brushed, most often by allowing for foaming. However, the tips of bristles must also be somewhat firm in order to exert sufficient vertical and lateral pressure to dislodge bacteria and food lodged in the surface being brushed. Examples of brushing devices in the prior art are conventional toothbrushes and complex brush devices.

Scraping, in contrast, is most commonly done without the aid of a cleansing medium. By exerting only a lateral pressure on the surface of the tongue, the scraping element is designed to merely dislodge and extract bacteria and food buildup from the uniform surface features of the dorsum of the tongue; generally the only vertical pressure exerted is due to the weight of the scraping element itself. Once those

materials are extracted from the scraped surface, they are transported away from the scraped surface on the face of the scraping element. However, scraping devices are only minimally effective at dislodging and removing bacteria and food buildup from only the uniform surface features of the dorsum. Moreover, due to their simple designs, scraping devices are not at all effective at dislodging and removing bacteria and food buildup from the uneven features of the dorsum, especially the microscopic features. Examples of scraping devices in the prior art are scrapers and combination scraper-brushes.

Conventional toothbrushes, while being perhaps the most common devices used to cleanse the tongue, suffer some of the most significant deficiencies in both cleansing and use-related aspects. Conventional toothbrushes are specifically constructed to cleanse the teeth, not the tongue, effectively. As a result, individual toothbrush bristles must be long enough to get below the gingival tissue and build sufficient lather for cleansing, yet not be so abrasive as to damage the teeth or surrounding gingival tissue. Longer bristles are also typically used to minimize abrasiveness since longer bristles tend to be more pliable when pressure is exerted on them given the physics involved. Moreover, the overall width of the head and bristles must be sufficiently slender to fit into the narrow areas of the mouth between the teeth and cheek. As a result, conventional toothbrushes have a high profile (measured from the bottom of the bristle to the top of the head), soft bristles, and a narrow cleansing area.

Those same characteristics that make conventional toothbrushes especially effective at cleaning the teeth make them unsuitable for cleansing the tongue. First, conventional toothbrushes tend to have a high profile due to their long, soft bristles. The length of such bristles allows a toothbrush to reach into the crevices between and around teeth and provides a safe margin between the tips of the bristles and the hard base of the toothbrush, but also makes the toothbrush difficult to fit into the rear portion of the mouth. That is significant in that such a brush cannot be used easily to cleanse the tongue without causing a "gag reflex" to occur. Second, although the softness of the bristles of conventional toothbrushes prevents damage to the teeth and gingival tissue, such softness also makes it difficult to exert sufficient downward pressure on the tongue with the bristles so as to dislodge bacteria and food buildup from the tongue and its numerous crevices and contours effectively. Third, while the generally slender configuration of the cleansing head on conventional toothbrushes allows them to fit into the narrow spaces between lips and teeth and the tongue and teeth, it prevents such devices from covering a sufficient surface area quickly, as is required to provide efficient cleaning over the wide surface area presented by the tongue. Accordingly, conventional toothbrushes are unsuitable for cleansing the tongue.

Also known in the prior art are a few devices specifically directed toward cleansing the tongue. Most of these devices are directed toward scraping the tongue, either with a specific scraper or very short bristles. Like conventional toothbrushes, however, these devices suffer significant deficiencies in both cleansing and other defects. First, as discussed above, devices that employ scrapers or very short bristles to scrape the tongue cannot cleanse the numerous contours of the tongue effectively because they cannot penetrate into the furrows, grooves, folds, and cavities of the tongue, especially the microscopic features. Nor can such devices accommodate cleansing of the protrusions or projections from the surface of the tongue while maintaining contact with surface of the tongue. Second, such devices are

5,749,116

3

not conducive to use with a cleansing medium because they either lack substantial, flexible bristles which will build lather, or provide only minimal space between the tongue and the solid portion of the head of the device, thereby preventing the scrubbing action necessary to build lather for cleansing the tongue. Because of the lack of lather, bacteria and food buildup in the uneven features of the tongue are not transported away from the surface of the tongue by a scraper device or one with very short bristles.

Combination scraper-brushes tend to suffer the same problems as scrapers, as well as several additional problems. First, for the scraper and bristles both to be effective, both must be relatively short (otherwise the device will have too high a profile and, like conventional toothbrushes, will elicit a strong "gag reflex"). Because the scraper must be short, mucous and food tend to accumulate between the scraper blade and the head of the device, decreasing the effectiveness of the scraper and making it difficult to clean. Because the bristles must be short, they are abrasive, uncomfortable and potentially injurious to the user, do not flex or agitate enough to develop lather effectively, and tend to "gum up" with mucous, food, and dried cleaning media. As a result, combination scraper-brushes tend to be less effective in use than either scrapers or brushes and also tend to be more difficult to clean.

Complex brush devices are also known in the prior art. Such devices generally use motors or complex mechanical systems to agitate the bristles of the brush. They are, accordingly, expensive, more prone to break, and more difficult to control than simpler brushes.

It is, therefore, an object of the present invention to provide a tongue hygiene device which can cleanse the dorsum of the tongue, including macroscopic and microscopic features, effectively. It is also an object of the present invention to provide such a tongue hygiene device that can brush the surface of the tongue, form lather from a cleansing medium, and assist in the communication of the lathered cleansing medium away from the surface being brushed through foaming, yet not abrade the surface of the tongue. It is a further object of the present invention to provide a tongue hygiene device that can be used and cleaned easily and can be produced relatively inexpensively.

SUMMARY OF THE INVENTION

These objects and others are achieved according to the present invention by a tongue hygiene device which allows the tongue to be brushed, generally with a mildly abrasive cleanser. The tongue hygiene device includes a generally elongate handle section and a generally disk-shaped cleansing section. The handle section is ergonomically designed to allow the user to hold the tongue hygiene device comfortably in proper cleansing alignment with the tongue. The cleansing section includes three generally parallel circular patterns of medium-length bristles of medium stiffness, protruding from a generally disk-shaped head element which has a top face, a bottom face from which the bristles protrude, and a large aperture extending between the centers of the bottom and top faces which is surrounded by the bristles on the bottom face. The bristles allow the tongue hygiene device to be used to cleanse the tongue by brushing bacteria and food buildup from the tongue, generally with a mildly abrasive cleanser. The aperture allows air and the lather formed by brushing with a cleanser to pass through the head element, thereby increasing the lather and facilitating the passage of bacteria and food buildup away from the surface of the tongue. The aperture also provides a conduit

4

for the passage of air and water through the head element during cleaning of the tongue hygiene device, expediting and simplifying cleaning of the tongue hygiene device and hastening drying of the bristles. Due to the absence of bristles where the aperture is located, the circular pattern of bristles surrounding the aperture are able to flex inward without meeting any resistance from other bristles, allowing more intense scrubbing of the deeper furrows, folds grooves and cavities near the center of the dorsum. As a result, the unique circular pattern of bristles surrounding the aperture provides the optimal design for cleansing both the margins and deep inner features of the dorsum of the tongue.

Further object, features, and advantages of the invention will become evident from a consideration of the following detailed description when taken in conjunction with the accompanying drawings and appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

To facilitate an understanding of the invention, a preferred embodiment thereof is illustrated in the accompanying drawings, from an inspection of which, when considered in connection with the following description, its construction, its operation, and many of its advantages should be readily understood and appreciated.

FIG. 1 is a perspective view of a tongue hygiene device of the present invention.

FIG. 2 is a side plane view of the present invention.

FIG. 3 is a bottom plane view of the present invention.

FIG. 4 is a detailed side cross-sectional view of a portion of the present invention.

FIG. 5 is a detailed front cross-sectional view of a portion of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIGS. 1 through 5 illustrate a tongue hygiene device as described and claimed in this application. As shown in FIGS. 1, 2, and 3, the tongue hygiene device 10 comprises two portions: a generally elongate handle portion 11 and a generally disk-shaped cleansing head portion 17. Also as shown in FIGS. 1, 2, and 3, the cleansing head 17 is disposed at one end of the handle portion 11.

As shown in FIG. 2, the generally elongate handle portion 11 of the tongue hygiene device 10 is ergonomically structured to be conveniently and effectively gripped by a user. Specifically, in a preferred embodiment of the tongue hygiene device, the handle portion 11 features five separate finger notches 12, 13, 14, 15 and 16 to fit the fingers and thumb of the user comfortably and to prevent slippage. Unlike conventional toothbrushes, which may include finger notches designed to be used to hold the toothbrush with the cleansing head angled sideways (towards the gingival tissue between the teeth and gum), finger notches 12, 13, 14, 15 and 16 are ergonomically designed to facilitate placement of the user's fingers and thumb during use of the tongue hygiene device with the bristles 22 of the cleansing head 17 angled downward. This design allows the tongue hygiene device to be equally effective whether used by a right-handed or left-handed user. The handle portion 11 also features a thumb rest 16 so that the thumb can assist in gripping the handle portion 11 firmly during use. Further, in a preferred embodiment of the tongue hygiene device, the handle portion 11 is formed of a generally plastic material so as to facilitate cost-effective manufacturing and provide for some resilience during use. Disposed at the distal end of the

handle portion 11 is a cleansing head 17. Due to the ergonomic construction of the handle portion 11, an individual holding the handle portion 11 can easily pass the cleansing head 17 over the teeth for convenient and comfortable manipulation of the tongue hygiene device and cleansing of the tongue.

As shown in FIGS. 2, 4 and 5, the cleansing head 17 of the tongue hygiene device 10 includes a bottom face 18, a top face 19, and a side edge 20. The cleansing head 17 is structured to fit comfortably and conveniently within an individual's mouth. In a preferred embodiment of the tongue hygiene device as shown in FIGS. 1 and 3, the cleansing head 17 has a generally disk-shaped configuration of approximately one inch in diameter, thereby maximizing the surface area to be brushed during use while facilitating convenient and comfortable passage into a user's mouth. As shown in FIG. 2, the side edge 20 of the cleansing head 17 is narrow so as to diminish the height of the cleansing head and maximize the clearance between the cleansing head and the top surface of the interior of the mouth to avoid a gag reflex during brushing, yet not so narrow that the cleansing head 17 lacks sufficient rigidity to cleanse the tongue adequately. In a preferred embodiment of the tongue hygiene device as shown in FIG. 2, the side edge 20 of the cleansing head 17 has a thickness of approximately one-quarter inch. Further, the side edge 20 preferably includes a rounded and highly polished surface which will curtail any abrasion that might occur due to contact between the side edge 20 of the cleansing head 17 and the interior of the mouth.

As shown in FIGS. 2, 4 and 5, protruding from the bottom face 18 of the cleansing head 17 are a plurality of bristles 22. In a preferred embodiment of the tongue hygiene device as shown in FIGS. 4 and 5, each individual one of these bristles 22 will be formed from a plurality of strands of nylon, or another like material. Through such a construction, the needs for stiffness and flexibility of the bristles 22 can be balanced to render the bristles effective for both dislodging bacteria and food buildup and forming lather. Furthermore, as shown in FIG. 2, an aperture 21 is formed through the center of the bottom face 18 of the cleansing head 17. As shown in FIGS. 4 and 5, the aperture 21, which is preferably cylindrical, extends through the bottom face 18 and the top face 19 of the cleansing head 17 parallel to the side edge 20. The aperture 21 allows easy passage of air and liquid through the cleansing head 17. In a preferred embodiment of the tongue hygiene device as shown in FIG. 3, the aperture has diameter of one-quarter inch. Accordingly, during use, the admissibility of fluid between the cleansing head 17 and an individual's tongue facilitates the formation of an effective cleaning lather by the bristles 22. Due to the absence of bristles 22 on the bottom face 18 at the location of the aperture 21, the bristles 22 surrounding the aperture 21 are able to flex inward, toward the center of the aperture 21, without meeting any resistance from the other bristles 22, allowing more intense scrubbing of the deeper furrows, folds, grooves and cavities near the center of the dorsum of the tongue. Additionally, the cleansing head 17 and a base of the bristles 22 can be effectively and conveniently cleaned as fluid freely flows through the aperture 21 in the cleansing head 17.

As shown in FIGS. 1 through 5, the bristles 22 will preferably have a stiffness or tensile strength sufficient to permit downward pressure necessary to dislodge particles from the tongue without complete displacement or bending while providing sufficient flexibility to permit an effective scrubbing and cleansing of the tongue. In a preferred embodiment of the tongue hygiene device, the bristles 22

will have a stiffness or tensile strength approximating that of medium stiffness bristles of a conventional toothbrush. Further, in a preferred embodiment of the tongue hygiene device, the bristles 22 protrude approximately one-quarter inch from the bottom face 18 of the cleansing head 17 and, as a result, are able to delve into the various contours and crevices formed on the tongue in an effective and convenient manner.

The invention has been described above in an illustrative manner and it is to be understood that terminology which has been used is intended to be in the nature of description rather than of limitation. Obviously many modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. A tongue hygiene device for use with a mildly abrasive cleansing medium, comprising:

a generally elongate handle having a top surface, a bottom surface, and proximal and distal ends, said handle being ergonomically designed to provide finger notches for placement of a user's fingers on the top surface of said distal handle portion and wherein the bottom surface is substantially smooth except for a single thumb notch for placement of a user's thumb and;

a generally disk-shaped cleansing head portion disposed at the proximal end of said handle portion structured to fit within a user's mouth, said cleansing head portion having a bottom face, a top face, a side edge and an aperture located centrally therethrough to permit passage of fluid and air; and

a plurality of bristles protruding from the bottom face of said cleansing head portion in a generally perpendicular relation thereto.

2. A tongue hygiene device as recited in claim 1 wherein said bristles are disposed in a generally parallel circular pattern extending outward from said aperture toward said side edge.

3. A tongue hygiene device as recited in claim 1 wherein said bristles have a medium stiffness.

4. A tongue hygiene device as recited in claim 1 wherein said bristles protrude approximately one-quarter inch from the bottom face of said cleansing head portion.

5. A tongue hygiene device as recited in claim 1 wherein the diameter of the disk formed by said cleansing head portion measures approximately one inch.

6. A tongue hygiene device as recited in claim 1 wherein the height of the side edge of said cleansing head portion measures approximately one-quarter inch.

7. A tongue hygiene device as recited in claim 1 wherein the side edge of said cleansing head portion has a rounded and highly polished surface.

8. A tongue hygiene device as recited in claim 1 wherein each of said bristles includes a plurality of individual strands.

9. A tongue hygiene device as recited in claim 1 wherein the aperture located centrally through the bottom face and top face of said cleansing head portion has a diameter of approximately one-quarter inch.

10. A tongue hygiene device for use with a cleansing medium, comprising:

a generally elongate handle having a top surface, a bottom surface, and proximal and distal portions,

said distal portion having notches for placement of a user's fingers on the top surface of said distal portion

5,749,116

7

and the bottom surface is substantially smooth except for a notch for placement of a user's thumb, said notches orienting said handle in a single position in said user's hand;
said proximal portion being curved and being attached to said distal portion;
a generally disk-shaped cleansing head portion disposed at said proximal portion structured to fit within a user's mouth, said cleansing head portion having a bottom

8

face, a top face, a side edge and an aperture located centrally therethrough to permit passage of fluid and air, wherein the cleansing head portion is at a different planar orientation than the distal portion; and
a plurality of bristles protruding from the bottom face of said cleansing head portion in a generally perpendicular relation thereto.

* * * * *

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below:

IPEA/ _____

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:
The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only	
Identification of IPEA	Date of receipt of DEMAND
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION	
Applicant's or agent's file reference 2074-5003	
International application No. PCT/BR02/00170	International filing date (day/month/year) 04 DECEMBER 2002 (04/12/02)
(Earliest) Priority date (day/month/year) 04 DECEMBER 2001 (04/12/01)	
Title of invention TOOTHBRUSH	
Box No. II APPLICANT(S)	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) JOHNSON & JOHNSON INDUSTRIAL LTDA Rodovia Presidente Dutra, s/nº, Km 154 12240-906 São José dos Campos - SP BRAZIL	
Telephone No. (55)(12)3932-3529	
Facsimile No. (55)(12)3932-4011	
Teleprinter No.	
Applicant's registration No. with the Office	
State (that is, country) of nationality: BR	State (that is, country) of residence: BR
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) ORIANI, Paulo César de Godoy Rua João Thomazine, 165 13253-450 Itatiba - SP BRAZIL	
State (that is, country) of nationality: BR	State (that is, country) of residence: BR
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) DITLEF, Amaido Antonio Rua Esperança, 86/34 12243-700 São José dos Campos - SP BRAZIL	
State (that is, country) of nationality: BR	State (that is, country) of residence: BR
☒ Further applicants are indicated on a continuation sheet.	

Sheet No. 2.

International application No.
PCT/BR02/00170

Continuation of Box No. II APPLICANT(S)

If none of the following sub-boxes is used, this sheet should not be included in the demand.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

SIMIONATO, Luiz Bellino
Rua Esperança, 227/801
12243-700 São José dos Campos - SP
BRAZIL

State (that is, country) of nationality:
BR

State (that is, country) of residence:
BR

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

FALLEIROS, Alexandre Petrocini
Rua Oscar Coelho Laurino, 171
12244-840 São José dos Campos - SP
BRAZIL

State (that is, country) of nationality:
BR

State (that is, country) of residence:
BR

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

MARSON NETO, Orlando
Rua Nazur, 82
12307-030 Jacareí - SP
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State (that is, country) of nationality:
BR

State (that is, country) of residence:
BR

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

State (that is, country) of nationality:

State (that is, country) of residence:

☐ Further applicants are indicated on another continuation sheet.

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCEThe following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: (Family name followed by given name; for a legal entity, full official designation.
The address must include postal code and name of country.)

ARNAUD, Antonio M.P.;
 PINHEIRO, Waldemar Alvaro;
 NUNES, Luiz Antonio Ricco; and
 SCATAMBURLO, Paulo Sérgio
 All of Rua José Bonifácio, 93 - 7th floor
 01003-901 - São Paulo - SP BRAZIL

Telephone No.

(55)(11) 3106-1377

Facsimile No.

(55)(11) 3106-1377

Teleprinter No.

Agent's registration No. with the Office

☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.**Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION**

Statement concerning amendments:*

1. The applicant wishes the international preliminary examination to start on the basis of:

☒ the international application as originally filed

the description

☐ as originally filed☐ as amended under Article 34

the claims

☐ as originally filed☐ as amended under Article 19 (together with any accompanying statement)☐ as amended under Article 34

the drawings

☐ as originally filed☐ as amended under Article 342. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). (This check-box may be marked only where the time limit under Article 19 has not yet expired.)

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English

☒ which is the language in which the international application was filed.☐ which is the language of a translation furnished for the purposes of international search.☐ which is the language of publication of the international application.☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.**Box No. V ELECTION OF STATES**

The applicant hereby elects all eligible States (that is, all States which have been designated and which are bound by Chapter II of the PCT)

excluding the following States which the applicant wishes not to elect:

Sheet No. 4.

International application No.
PCT/BR02/00170

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
| 3. copy (or, where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter | : | sheets |
| 6. other (specify) | : | sheets |

For International Preliminary
Examining Authority use only

received	not received
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐
☐	☐

The demand is also accompanied by the item(s) marked below:

- | | |
|--|---|
| 1. ☒ fee calculation sheet | 5. ☐ statement explaining lack of signature |
| 2. ☐ original separate power of attorney | 6. ☐ sequence listings in computer readable form |
| 3. ☐ original general power of attorney | 7. ☐ tables in computer readable form related to sequence listings |
| 4. ☐ copy of general power of attorney; reference number, if any: | 8. ☒ other (specify): Request for detailed examination |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).


 Antonio M.P. Arnaud - Agent

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND: ..

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.☐ The applicant has been informed accordingly.4. ☐ The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPFA on:

PCT

FEE CALCULATION SHEET

Annex to the Demand

International application No. PCT/BR02/00170		For International Preliminary Examining Authority use only	
Applicant's or agent's file reference 2074-5003		Date stamp of the IPEA	
Applicant			
CALCULATION OF PRESCRIBED FEES			
1. Preliminary examination fee		EUR 1,530.00	P
2. Handling fee (<i>Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.</i>)		EUR 159.00	H
3. Total of prescribed fees Add the amounts entered at P and H and enter total in the TOTAL box		EUR 1,689.00	
		TOTAL	
MODE OF PAYMENT			
☐ authorization to charge deposit account with the IPEA (see below)	☐ cash		
☐ cheque	☐ revenue stamps		
☐ postal money order	☐ coupons		
☐ bank draft	☐ other (specify):		
AUTHORIZATION TO CHARGE (OR CREDIT) DEPOSIT ACCOUNT (This mode of payment may not be available at all IPEAs)			
☐ Authorization to charge the total fees indicated above.		IPEA/ _____	
☐ (This check-box may be marked only if the conditions for deposit accounts of the IPEA so permit) Authorization to charge any deficiency or credit any overpayment in the total fees indicated above.		Deposit Account No.: _____	
		Date: _____	
		Name: _____	
		Signature: _____	

From the INTERNATIONAL SEARCHING AUTHORITY

PCTNOTIFICATION OF RECEIPT
OF SEARCH COPY

(PCT Rule 25.1)

To:

ARNAUD, Antonio M P
Rua José Bonifácio, 93
7th Floor
01003-901 Sao Paulo, SP
BRAZILDate of mailing
(day/month/year)

31/01/2003

Applicant's or agent's file reference

2074-5003

IMPORTANT NOTIFICATION

International application No.

PCT/BR 02/ 00170

International filing date(day/month/year)

04/12/2002

Priority date (day/month/year)

04/12/2001

Applicant

JOHNSON & JOHNSON INDUSTRIAL LTDA

1. Where the International Searching Authority and the Receiving Office are not the same office:

The applicant is hereby notified that the search copy of the international application was received by this International Searching Authority on the date indicated below.

Where the International Searching Authority and the Receiving Office are the same office:

The applicant is hereby notified that the search copy of the international application was received on the date indicated below.

06/01/2003

(date of receipt).

2. ☐ The search copy was accompanied by a nucleotide and/or amino acid sequence listing in computer readable form.

3. Time limit for establishment of International Search Report

The applicant is informed that the time limit for establishing the International Search Report is 3 months from the date of receipt indicated above or 9 months from the priority date, whichever time limit expires later

4. A copy of this notification has been sent to the International Bureau and, where the first sentence of paragraph 1 applies, to the Receiving Office.

Name and mailing address of the International Searching Authority

European Patent Office, P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

ISA/EP

PATENT COOPERATION TREATY

17 SET 2003

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

WRITTEN OPINION
(PCT Rule 66)

To:

ARNAUD, Antonio M P et al.
Rua José Bonifácio, 93
7th Floor
01003-901 Sao Paulo, SP
BRESILDate of mailing
(day/month/year)

08.09.2003

Applicant's or agent's file reference
2074-5003

REPLY DUE

within 3 month(s)
from the above date of mailingInternational application No.
PCT/BR02/00170International filing date (day/month/year)
04.12.2002Priority date (day/month/year)
04.12.2001International Patent Classification (IPC) or both national classification and IPC
A48B5/02

Applicant

JOHNSON & JOHNSON INDUSTRIAL LTDA et al.

1. This written opinion is the first drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(II) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application
3. The applicant is hereby invited to reply to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 04.04.2004

Name and mailing address of the international
preliminary examining authority:European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4485

Authorized Officer

Cardan, C

Formalities officer (incl. extension of time limits)
Klepe, C
Telephone No. +49 89 2399-2164

I. Basis of the opinion

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

Description, Pages

1-13 as originally filed

Claims, Numbers

1-28 as originally filed

Drawings, Sheets

14-44 as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

WRITTEN OPINION

International application No. **PCT/BR02/00170**

5. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this opinion.)

6. Additional observations, if necessary:

V. Reasoned statement under Rule 66.2(a)(II) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-28
Inventive step (IS)	Claims	1-28
Industrial applicability (IA)	Claims	

2. Citations and explanations

see separate sheet

Re Item V

1. Independent claim 1 can not be considered as fulfilling the requirements of Art. 33(2) and (3) PCT because all the technical features disclosed therein are known from the document US 5 749 116 A (D1), i.e.: a brush having a head (c 2/ 42) and a handle (c 2/ 41), the handle being provided with a thumb rest (shoulder) (c 2/ 62) and a little finger support (c 2/ 50).

2. The dependent claims 2 to 28 do not add any further technical features, to the independent claim 1, which are not already disclosed in the prior art cited in the search report and that in combination with those of claim 1 could lead to a novel or incentive claim.

3. When filing amended claims the applicant should at the same time bring the description into conformity with the amended claims. Care should be taken during revision not to add subject-matter which extends beyond the content of the application as originally filed (Article 19(2) PCT).

In order to facilitate the examination of the conformity of the amended application with the requirements of Article 19(2) PCT, the applicant is requested to clearly identify the amendments carried out, irrespective of whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based.

If the applicant regards it as appropriate these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.

PATENT COOPERATION TREATY

23 MAR 2004 74

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Rule 71.1)

To:

ARNAUD, Antonio M P et al.
Rua José Bonifácio, 93
7th Floor
01003-901 São Paulo, SP
BRASIL

Date of mailing
(day/month/year)

08.03.2004

Applicant's or agent's file reference
2074-5003

IMPORTANT NOTIFICATION

International application No.
PCT/BR 02/00170

International filing date (day/month/year)
04.12.2002

Priority date (day/month/year)
04.12.2001

Applicant
JOHNSON & JOHNSON INDUSTRIAL LTDA et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions are patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tlx 623866 epmu d
Fax: +49 89 2399 - 4485

Authorized Officer

Klepe, C

Tel. +49 89 2399-2164



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

Applicant's or agent's file reference 2074-5003		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/16)	
International application No. PCT/BR 02/00170	International filing date (day/month/year) 04.12.2002	Priority date (day/month/year) 04.12.2001	
International Patent Classification (IPC) or both national classification and IPC A48B5/02			
Applicant JOHNSON & JOHNSON INDUSTRIAL LTDA et al.			
1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of 4 sheets, including this cover sheet. ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of sheets.			
3. This report contains indications relating to the following items: - I ☒ Basis of the opinion - II ☐ Priority - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability - IV ☐ Lack of unity of invention - V ☒ Reasoned statement under Rule 66.2(a)(II) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement - VI ☐ Certain documents cited - VII ☐ Certain defects in the international application - VIII ☐ Certain observations on the international application			
Date of submission of the demand 03.07.2003		Date of completion of this report 08.03.2004	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80286 Munich Tel. +49 89 2399 - 0 Tx: 523656 apmu d Fax: +49 89 2399 - 4485		Authorized Officer Cardan, C Telephone No. +49 89 2399-8115 	

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/BR 02/00170**

I. Basis of the report

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-13 as originally filed

Claims, Numbers

1-28 as originally filed

Drawings, Sheets

1/4-4/4 as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/BR 02/00170**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-27
	No: Claims	
Inventive step (IS)	Yes: Claims	1-27
	No: Claims	
Industrial applicability (IA).	Yes: Claims	1-27
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

1. Document EP 0 580 406 (D1) considered as the most relevant prior art discloses a toothbrush having a handle with a shoulder at the end closer to the brush head. The subject-matter of claim 1 differs with respect to D1 in that the shoulder is present only on one face of the handle and further there is a second shoulder at the other end of the handle again present only on one face of the handle. Thus, independent claim 1 could be seen as fulfilling the requirements of Art. 33(2) and (3) PCT.
2. According to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 should have been mentioned in the description and briefly discussed therein.

PATENT COOPERATION TREATY

10 FEB 2003

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

ARNAUD, Antonio M P
Rua José Bonifácio, 93
7th Floor
01003-901 Sao Paulo, SP
BRAZIL

COMMUNICATION IN CASES FOR WHICH
NO OTHER FORM IS APPLICABLE

	Date of mailing (day/month/year) 31/01/2003
Applicant's or agent's file reference 2074-5003	REPLY DUE See paragraph 1 below
International application No. PCT/BR 02/ 00170	International filing date (day/month/year) 04/12/2002
Applicant JOHNSON & JOHNSON INDUSTRIAL LTDA	

1. ☐ REPLY DUE within _____ 30884 days from the above date of mailing☒ NO REPLY DUE

2. COMMUNICATION:

The applicant is informed that establishment of the international search report (ISR) for non first-filings may be delayed due to a current search backlog.

Although the time limit for entering the national phase before designated offices under Article 22(1) PCT and elected offices under Article 39(1) PCT has, with effect from 1 April 2002 (see PCT Gazette 44/2001 Section IV) been set at 30 months from the priority date (before the EPO the time limit is 31 months from the priority date - see Rule 107 EPC as amended with effect from 2 January 2002 - OJ EPO 8-6/2001, 373) not all PCT contracting states have yet made the necessary changes to their national laws and will for the time being continue to require entry to the national phase at 20/21 months from the priority date if a demand has not been filed before the end of 19 months from the priority date - see PCT Gazette/PCT Newsletter available on the WIPO internet site at <http://www.wipo.int/pct/en/index.html> for an up to date list of the applicable time limits.

In these circumstances, the EPO acting as IPEA will accept, without any late payment fee under Rule 58bis PCT, the handling fee and the preliminary examination fee due in respect of the demand relating to the present application, even if they are not paid within the time limit prescribed in Rules 57.3 and 58.1(b) PCT, provided that they are paid within one month from the date of transmittal of the ISR; i.e., the EPO will only send an invitation pursuant to Rule 58bis.1(a) PCT after expiry of this one-month period. In all cases where the EPO has sent an invitation to pay and the applicant has not paid in full the amount due, the demand shall be considered as if it had not been submitted (Rule 58bis.1(b)-(d) PCT). A loss of rights may well be the consequence in designated states where the time limit for entry into the national phase under Article 22 PCT has already expired (see also Article 37(4) PCT).

Note that if the competent IPEA chosen by the applicant is not the EPO and if the fees mentioned above are not paid within the time limit prescribed in Rules 57.3 and 58.1(b) PCT, the competent IPEA is entitled to apply Rule 58bis.1(a) PCT immediately thereafter.

If your application is affected, we apologise for any inconvenience caused.

Finally, applicants are reminded that as of 3 January 2002 a rationalised PCT II procedure may apply, see OJ EPO 11/2001, 539 and that the EPO as IBA will not carry out international search on an application which relates to no more than a method of doing business, see OJ EPO 10/2001, 482. Applicants should also bear in mind the restriction of the EPO's competence as IBA and IPEA in certain technical fields in respect of certain international applications, see OJ EPO 1/2002, 52 and PCT Newsletter 1/2002 for further details.

Name and mailing address of the International Searching Authority  European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer ISA/EP
--	----------------------------------

PATENT COOPERATION TREATY

28

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0 6 AUG.2003

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

To:

ARNAUD, Antonio M P et al.
Rua José Bonifácio, 93
7th Floor
01003-901 Sao Paulo, SP
BRESIL

NOTIFICATION OF RECEIPT OF DEMAND BY COMPETENT INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

(PCT Rules 59.3(e) and 61.1(b), first sentence
and Administrative Instructions, Section 601(a))

Date of mailing
(day/month/year) 28-07-2003

Applicant's or agent's file reference
2074-5003

IMPORTANT NOTIFICATION

International application No.
PCT/ BR 02/ 00170

International filing date (day/month/year)
04/12/2002

Priority date (day/month/year)
04/12/2001

Applicant

JOHNSON & JOHNSON INDUSTRIAL LTDA et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority considers the following date as the date of receipt of the demand for international preliminary examination of the international application:

03/07/2003

2. This date of receipt is:

- ☒ the actual date of receipt of the demand by this Authority (Rule 61.1(b)).
☐ the actual date of receipt of the demand on behalf of this Authority (Rule 59.3(e)).
☐ the date on which this Authority has, in response to the invitation to correct defects in the demand (Form PCT/IPRA/404), received the required corrections.

3. ☐ **ATTENTION:** That date of receipt is **AFTER** the expiration of 19 months from the priority date. Consequently, the election(s) made in the demand does (do) not have the effect of postponing the entry into the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)). Therefore, the acts for entry into the national phase must be performed within 20 months from the priority date (or later in some Offices) (Article 22). For details, see the *PCT Applicant's Guide*, Volume II.

- ☐ (If applicable) This notification confirms the information given by telephone, facsimile transmission or in person on:

4. Only where paragraph 3 applies, a copy of this notification has been sent to the International Bureau.

Name and mailing address of the IPRA/

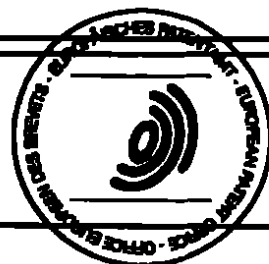


European Patent Office
D-80298 Munich
Tel. (+49-89) 2399-0, Tx: 523656 epmu d
Fax: (+49-89) 2399-4465

Authorized officer

LUOMA M P

Tel. (+49-89) 2399-3929



PATENT COOPERATION TREATY

PCT/BR02/00170

22 AUG 2003

41

PCT

INFORMATION CONCERNING ELECTED
OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

From the INTERNATIONAL BUREAU

To:

ARNAUD, Antonio, M., P.
Rua José Bonifácio, 93 - 7th floor
CEP-01003-901 São Paulo, SP
Brazil

Date of mailing (day/month/year)

12 August 2003 (12.08.03)

Applicant's or agent's file reference

2074-5003

IMPORTANT INFORMATION

International application No.

PCT/BR02/00170

International filing date (day/month/year)

04 December 2002 (04.12.02)

Priority date (day/month/year)

04 December 2001 (04.12.01)

Applicant

JOHNSON & JOHNSON INDUSTRIAL LTDA et al

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

EP : AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK,
TR

National : AU, BG, CA, CN, DE, GB, IL, JP, KP, KR, MN, NO, PL, RO, RU, SK, US

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

AP : GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

OA : BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

National : AE, AG, AL, AM, AT, AZ, BA, BB, BY, BZ, CH, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, ES,
FI, GD, GE, GH, GM, HR, HU, ID, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,
MW, MX, MZ, NZ, OM, PH, PT, SC, SD, SE, SG, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU,
ZA, ZM, ZW

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 38(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 38(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed until 31 months from the priority date for all States designated for the purposes of obtaining a European patent.

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 740-1435

Authorized officer:

Zakaria EL KHODARY

Telephone No. (41-22) 336 8240

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF RECEIPT OF
RECORD COPY

(PCT Rule 24.2(a))

From the INTERNATIONAL BUREAU

To:

ARNAUD, Antonio, M., P.
Rua José Bonifácio, 93 - 7th floor
CEP-01003-901 São Paulo, SP
Brazil

Date of mailing (day/month/year) 15 January 2003. (15.01.03)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 2074-5003	International application No. PCT/BR02/00170

The applicant is hereby notified that the International Bureau has received the record copy of the international application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

JOHNSON & JOHNSON INDUSTRIAL LTDA (for all designated States except US)
ORIANI, Paulo, César, de Godoy et al (for US)

International filing date : 04 December 2002 (04.12.02)
Priority date(s) claimed : 04 December 2001 (04.12.01)
25 November 2002 (25.11.02)

Date of receipt of the record copy
by the International Bureau : 20 December 2002 (20.12.02)

List of designated Offices :

AP : GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP : AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR

OA : BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG

National : AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC,
EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,
MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT,
TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 338.87.40

Authorized officer:

S. Diot

Telephone No. (41-22) 338 9608

Continuation of Form PCT/IB/301

NOTIFICATION OF RECEIPT OF RECORD COPY

83

Date of mailing (day/month/year) 15 January 2003 (15.01.03)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference 2074-5003	International application No. PCT/BR02/00170

ATTENTION

The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the international application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

- ☒ time limits for entry into the national phase - see updated important information (as of April 2002)
- ☒ confirmation of precautionary designations (if applicable)
- ☒ requirements regarding priority documents (if applicable)

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

INFORMATION ON TIME LIMITS FOR ENTERING THE NATIONAL PHASE

The applicant is reminded that the "national phase" must be entered before each of the designated Offices indicated on the cover sheet of this Notification by paying national fees and furnishing translations, as prescribed by Articles 22 and 39 and the applicable national laws. In addition, the applicant may also have to comply with other special requirements applicable in certain Offices. It is the applicant's responsibility to ensure the necessary steps to enter the national phase are taken in a timely fashion. Most Offices do not issue reminders to applicants in connection with the entry into the national phase.

The applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 30 MONTHS from the priority date, not only in respect of any elected Office where a demand for international preliminary examination is filed before the expiration of 19 months from the priority date (see Article 39(1)), but also in respect of any designated Office, in the absence of filing of such demand, where Article 22(1) as modified with effect from 1 April 2002 applies in respect of that designated Office. For further details, see PCT Gazette No. 44/2001 of 1 November 2001, pages 19926, 19932 and 19934, as well as the PCT Newsletter, October and November 2001 and February 2002 issues.

In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain designated or elected Offices. For regular updates on the applicable time limits (20, 21, 30 or 31 months, or other time limit), Office by Office, refer to the PCT Gazette ("Section IV" part published on a weekly basis), to the PCT Newsletter (on a monthly basis) and to the relevant National Chapters in Volume II of the PCT Applicant's Guide (the paper version of which is updated usually twice a year and the Internet version of which is updated usually on a weekly basis). Finally, a cumulative table of all applicable time limits for entering the national phase is available from WIPO's Internet site, via links from various pages the site including those of the Gazette, Newsletter and Guide, at <http://www.wipo.int/pct/en/index.html>.

Information about the requirements for filing a demand for international preliminary examination is set out in the PCT Applicant's Guide, Volume I/A, Chapter IX. Note that only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination (at present, all PCT Contracting States are bound by Chapter II).

CONFIRMATION OF PRECAUTIONARY DESIGNATIONS

This notification lists only specific designations made under Rule 4.9(a) in the request. It is important to check that these designations are correct. Errors in designations can be corrected where precautionary designations have been made under Rule 4.9(b). The applicant is hereby reminded that any precautionary designations may be confirmed according to Rule 4.9(c) before the expiration of 15 months from the priority date (this time limit may not be extended). If it is not confirmed, it will automatically be regarded as withdrawn by the applicant. There will be no reminder and no invitation. Confirmation of a designation consists of the filing of a notice specifying the designated State concerned (with indication of the kind of protection or treatment desired) and the payment of the designation and confirmation fees. The Notice of confirmation and payment must reach the receiving Office within the 15-month time limit.

REQUIREMENTS REGARDING PRIORITY DOCUMENTS

For applicants who have not yet complied with the requirements regarding priority documents, the following is recalled.

Where the priority of an earlier national, regional or international application is claimed, the applicant must submit a copy of the said earlier application, certified by the authority with which it was filed ("the priority document") to the receiving Office (which will transmit it to the International Bureau) or directly to the International Bureau, before the expiration of 16 months from the priority date, provided that any such priority document may still be submitted to the International Bureau before that date of international publication of the international application, in which case that document will be considered to have been received by the International Bureau on the last day of the 16-month time limit (Rule 17.1(a)).

Where the priority document is issued by the receiving Office, the applicant may, instead of submitting the priority document, request the receiving Office to prepare and transmit the priority document to the International Bureau. Such request must be made before the expiration of the 16-month time limit and may be subjected by the receiving Office to the payment of a fee (Rule 17.1(b)).

If the priority document concerned is not submitted to the International Bureau or if the request to the receiving Office to prepare and transmit the priority document has not been made (and the corresponding fee, if any, paid) within the applicable time limit indicated under the preceding paragraphs, any designated State may disregard the priority claim, provided that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within the time limit which is reasonable under the circumstances.

Where several priorities are claimed, the priority date to be considered for the purposes of computing the 16-month time limit is the filing date of the earliest application whose priority is claimed.

PATENT COOPERATION TREATY

PCT

NOTIFICATION RELATING TO PRIORITY CLAIM

(PCT Rules 26bis.1 and 26bis.2 and Administrative Instructions, Sections 402 and 409)

From the INTERNATIONAL BUREAU

To:

ARNAUD, Antonio, M., P.
Rua José Bonifácio, 93 - 7th floor
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Date of mailing (day/month/year) 11 March 2003 (11.03.03)	
Applicant's or agent's file reference 2074-5003	IMPORTANT NOTIFICATION
International application No. PCT/BR02/00170	International filing date (day/month/year) 04 December 2002 (04.12.02)
Applicant JOHNSON & JOHNSON INDUSTRIAL LTDA et al	

The applicant is hereby notified of the following in respect of the priority claim(s) made in the international application.

- ☒ **Correction of priority claim.** In accordance with the applicant's notice received on: 27 February 2003 (27.02.03), the following priority claim has been corrected to read as follows:
BR 25 November 2002 (25.11.02) PI 0205539-2
☐ even though the indication of the number of the earlier application is missing.
☐ even though the following indication in the priority claim is not the same as the corresponding indication appearing in the priority document:
- ☐ **Addition of priority claim.** In accordance with the applicant's notice received on: , the following priority claim has been added:
☐ even though the indication of the number of the earlier application is missing.
☐ even though the following indication in the priority claim is not the same as the corresponding indication appearing in the priority document:
- ☐ As a result of the correction and/or addition of (a) priority claim(s) under items 1 and/or 2, the (earliest) priority date is:
- ☐ **Priority claim considered not to have been made.**
☐ The applicant failed to respond to the invitation under Rule 26bis.2(a) (Form PCT/IB/316) within the prescribed time limit.
☐ The applicant's notice was received after the expiration of the prescribed time limit under Rule 26bis.1(a).
☐ The applicant's notice failed to correct the priority claim so as to comply with the requirements of Rule 4.10.
The applicant may, before the technical preparations for international publication have been completed and subject to the payment of a fee, request the International Bureau to publish, together with the international application, information concerning the priority claim. See Rule 26bis.2(c) and the PCT Applicant's Guide, Volume I, Annex B2(IB).
- ☐ In case where multiple priorities have been claimed, the above item(s) relate to the following priority claim(s):
- A copy of this notification has been sent to the receiving Office and
☒ to the International Searching Authority (where the international search report has not yet been issued).
☒ the designated Offices (which have already been notified of the receipt of the record copy).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Laurence GALLAY
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PATENT COOPERATION TREATY

12 MAY 2003

86

PCT

NOTIFICATION CONCERNING
SUBMISSION OR TRANSMITTAL
OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

From the INTERNATIONAL BUREAU

To:

ARNAUD, Antonio, M., P.
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CEP-01003-901 São Paulo, SP
Brazil

Date of mailing (day/month/year)

15 April 2003 (15.04.03)

Applicant's or agent's file reference

2074-5003

International application No.

PCT/BR02/00170

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Not yet published

International filing date (day/month/year)

04 December 2002 (04.12.02)

Priority date (day/month/year)

04 December 2001 (04.12.01)

Applicant

JOHNSON & JOHNSON INDUSTRIAL LTDA et al

IMPORTANT NOTIFICATION

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents
3. An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
4. The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, **the attention of the applicant is directed** to Rule 17.1(c) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority datePriority application No.Country or regional Office
or PCT receiving OfficeDate of receipt
of priority document

04 Dec 2001 (04.12.01)

PI 0106578-5

BR

16 Janu 2003 (16.01.03)

25 Nove 2002 (25.11.02)

PI 0205539-2

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01 Apri 2003 (01.04.03)

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

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PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES

(PCT Rule 47.1(c), first sentence)

To:

ARNAUD, Antonio, M., P.
Rua José Bonifácio, 93 - 7th floor
CEP-01003-901 São Paulo, SP
BRÉSIL

Date of mailing(day/month/year)
12 June 2003 (12.06.03)

Applicant's or agent's file reference
2074-5003

IMPORTANT NOTICE

International application No.
PCT/BR02/00170

International filing date(day/month/year)
04 December 2002 (04.12.02)

Priority date(day/month/year)
04 December 2001 (04.12.01)

Applicant

JOHNSON & JOHNSON INDUSTRIAL LTDA

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 20, the international application to the following designated Offices on the date indicated above as the date of mailing of this notice:

CH, EP, KP, KR, US

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BY, BZ, CA, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OA, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this notice is a copy of the international application as published by the International Bureau on 12 June 2003 (12.06.03) under No. 03/047388

4. **TIME LIMITS** for filing a demand for international preliminary examination and for entry into the national phase

The applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 30 MONTHS from the priority date, not only in respect of any elected Office if a demand for international preliminary examination is filed before the expiration of 19 months from the priority date, but also in respect of any designated Office, in the absence of filing of such demand, where Article 22(1) as modified with effect from 1 April 2002 applies in respect of that designated Office. For further details, see *PCT Gazette* No. 44/2001 of 1 November 2001, pages 19926, 19932 and 19934, as well as the *PCT Newsletter*, October and November 2001 and February 2002 issues.

In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain designated or elected Offices. For regular updates on the applicable time limits (20, 21, 30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

For filing a demand for international preliminary examination, see the *PCT Applicant's Guide*, Volume I/A, Chapter IX. Only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination (at present, all PCT Contracting States are bound by Chapter II).

It is the applicant's sole responsibility to monitor all these time limits.

The International Bureau of WIPO
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TOOTHBRUSH

Field of the Invention

The present invention refers, generally, to toothbrushes and, particularly, to a construction for
5 a toothbrush handle having improved ergonomic characteristics, which increase the comfort of the user during the brushing operation of the teeth.

Background of the Invention

Toothbrushes should be designed to assure a firm and
10 safe grip of the handle by the user and, consequently, an efficient and comfortable brushing operation of the different parts and surfaces of the dental arcades.

In order to allow the user to reach said different parts of the mouth and to brush different surfaces of
15 the teeth, according to different brushing movements, the toothbrushes should have the handle thereof designed for assuring an adequate grip in different operational conditions of rotation of the handle in relation to the user's hand.

Aiming at obtaining a construction that guarantees a
20 safe and comfortable grip in different operational conditions defined by the user himself during the brushing operation, different toothbrush handles have been proposed, some handles presenting a circular or
25 polygonal cross section, which is maintained substantially constant along the length of said handle. In other cases, the cross section of the handle suffers dimensional alterations along the length thereof, particularly with regard to its
30 height, in order to form shoulders, which help the axial locking of the handle in relation to the user's hand. In these cases, the rotational locking of the toothbrush is obtained by the cross section of the handle, which is shaped to make difficult the
35 involuntary rotation of the handle around its

longitudinal axis. These solutions with a polygonal cross section usually lead to toothbrushes that are not comfortable to grip.

Moreover, in other cases, together with variations in
5 the dimensions of the cross section along the length of the handle, the latter is further provided with inserts made of an antiskid elastomeric material, having smooth or irregular surfaces.

These prior art constructions, among which is found
10 the construction disclosed in patent application PCT/US96/12944 (WO 97/07706), have the object of providing toothbrushes which are easy to be held and controlled, giving a better control of the brushing movements in the different positions chosen by the
15 user.

In the prior art document cited above, the proposed handle comprises: a front shoulder portion, which is preferably formed of an elastomeric insert; a neck, connecting the shoulder portion to the head of the
20 toothbrush; a free end portion with an increased cross section; and a waist provided between the shoulder portion and the free end portion and presenting a width and height slightly inferior to those of the shoulder portion. It is also mentioned in this prior
25 art solution that the shape imparted to the handle increases the user's comfort when gripping it.

While the provision of the shoulder portion, of the waist and of the enlarged end portion improves the user's grip and control over the brushing movements,
30 this prior art solution leads to a handle that does not ergonomically adapt to the user's hands in the different operational conditions. The handle is also unnecessarily enlarged in regions in which the grip has only the function of directing the movements, as
35 it occurs in the region of the shoulder portion. The

89

alterations in the dimension of the cross section along the extension of the handle effectively produce means for retaining or locking the hands. Nevertheless, these retaining means are not designed
5 for leading to a correct and comfortable positioning of the user's fingers around the handle, and for allowing a more precise control of the movements of the head of the toothbrush and, consequently, of the group of bristles.

10 Still in relation to the deficient adaptation of the user's fingers around the handle, the prior art solutions, which are provided with the shoulder portions, waist and enlarged free end, such as it occurs with that described in PCT/US96/12944, present
15 the longitudinal extension of the handle developed according to a rectilinear alignment contained in a median plane, which is usually parallel to the mounting plane of the bristles to the head of the toothbrush. The rectilinear longitudinal development
20 of the toothbrush does not always allow achieving a comfortable adaptation of the handle to the palm of the hand. Although the provision of localized shoulders and enlarged portions has the purpose of giving the handle the desired ergonomic
25 characteristic, the simple existence of said elements has led to rather heavy designs, which impair the control and maneuverability of the toothbrush, that is, the acuity and precision of the movements to be imparted to the toothbrush during the brushing
30 operation of the teeth.

In brief, it may be said that the solutions proposed up to now have not succeeded in eliminating the need of providing a toothbrush with a more ergonomic handle, in order to give the user a better grip and
35 more comfort during brushing, i.e., a better control

in terms of acuity and precision of the movements.

Objects of the Invention

By reason of the above mentioned deficiencies related to the known toothbrush handles, the present invention
5 proposes a new construction for a toothbrush, with substantially improved ergonomic characteristics, giving the user more control over the movements to be effected, with the sensation of more comfort and safety when gripping the toothbrush, facilitating and
10 motivating the act of brushing the teeth.

It is a more specific object of the present invention to provide a toothbrush as mentioned above, which allows the brushing operation to be achieved with more comfort, resulting from the correct positioning of the
15 user's fingers, particularly the thumb, the little finger and the ring finger around the handle, as well as a better adaptation of the whole extension of the handle to the palm of the hand, in order to provide a better grip and a firm prehension of the handle,
20 allowing to achieve levels of acuity and precision of the movements not reached before with the known toothbrushes.

Summary of the Invention

In order to attain the objects mentioned above, basic
25 ergonomic constructive improvements have been made in a toothbrush of the type comprising, usually in a single piece: a head, having a front face constructed to carry a group of bristles, which are developed in any adequate arrangement; an elongated handle, having
30 a free end, an opposite end, a front face, and a rear face; and a neck, connecting the opposite end of the handle to the head.

According to the invention, the handle comprises a first shoulder defining a thumb supporting front
35 region and which is provided on the front face of the

handle at its opposite end; a second shoulder, having opposite sides for supporting the little finger and the ring finger, respectively, and which is provided on the rear face of the handle, spaced from said handle, said first and second shoulders being used when the toothbrush is gripped with the bristles turned to the user; and a thumb supporting rear region, provided on the rear face of the handle, close to its opposite end, in order to be used when the toothbrush is gripped with the bristles turned away from the user. The handle has a cross section contour that increases, in a continuous or discontinuous way, from the thumb supporting front region, close to the first shoulder, to the second shoulder. The handle may be further provided with a curvature along the length thereof, in order to make the front face convex, and the rear face concave..

Brief Description of the Drawings

The invention will be described below, with reference to the attached drawings, in which:

Figure 1 is a lateral elevational view of a possible configuration for the toothbrush of the present invention, incorporating a head with no bristles in this illustration;

Figure 2 is a top plan view of the toothbrush of figure 1, when observed from the side on which the bristles are mounted to the head.

Figure 3 is a perspective view of a toothbrush formed with the handle illustrated in figures 1 and 2, said handle being held by the user's hand in a first gripping condition, with the bristles facing the user;

Figure 4 is a lateral elevational view of the toothbrush, further illustrating, schematically, the forces acting on the different parts of the handle when it is held in the first gripping condition

illustrated in figure 3;

Figure 5 is a perspective view similar to that of figure 3, but illustrating the toothbrush in a second gripping condition, in which the bristles are turned
5 away from the user;

Figure 6 is a lateral elevational view of the toothbrush, further illustrating, schematically, the forces acting on the different parts of the handle when it is held in the second gripping condition
10 illustrated in figure 5; and

Figures 7 and 8 are similar views to those of figures 1 and 2, but illustrating a second embodiment of the toothbrush.

Description of the Illustrated Embodiment

15 As illustrated in the drawings, the toothbrush of the present invention comprises, preferably molded in a single piece made of an adequate material, such as polypropylene, a head 10 with an adequate contour and having a front face 10a, which is usually flat and
20 constructed to receive and affix a group of bristles 20 and a rear face 10b. The toothbrush further comprises an elongated handle 30, having a free end 31, an opposite end 32, a front face 30a, and a rear face 30b, the handle 30 being connected to the head 10
25 by means of a neck 40, which also has a front face 40a and a rear face 40b, and a longitudinal extension corresponding to about 1/4 the length of the handle 30.

The handle 30, the neck 40, and the head 10 are
30 preferably constructed symmetrically in relation to a median longitudinal plane P that intercepts the front and rear faces of these component parts of the toothbrush.

The handle 30 comprises a first shoulder 33 defining a
35 thumb supporting front region 33a, which is

- incorporated to the front face 30a of the handle 30, at the opposite end 32 of the latter and, more specifically, in the region where the handle 30 is joined to the neck 40. On the rear face 30b of the handle 30, at the free end thereof, is formed a second shoulder 34, presenting two opposite sides for supporting the little finger and the ring finger, respectively, i.e., one finger on each side of the second shoulder 34.
- As illustrated in figure 3, the first shoulder 33 and the second shoulder 34 are used when the toothbrush is gripped with the bristles 20 facing the user, said gripping being denominated herein as the first gripping condition.
- According to the embodiment illustrated in figures 1-6, the present toothbrush has the cross section contour of the handle 30 that increases continuously and progressively, from the thumb supporting front region 33a, close to the first shoulder 33, to the second shoulder 34, when said cross section contour begins to suffer a progressive reduction, preferably by lateral contours, which are slightly curved in a convex way and match with the rounded free end 31 of the handle 30. In the first embodiment illustrated in figures 1-6, the cross section of the handle 30, and not only its contour, increases continuously, from the thumb supporting front region 33a to the second shoulder 34. Similarly, the thickness of the handle 30 is also progressively reduced, from the second shoulder 34, which is provided in a region spaced from the adjacent free end 31 of the handle 30, said thickness being reduced until the rounded free end 31a of the handle 30 matches with the cross section contour of the handle in this region.
- In the illustrated constructions, the width of the

handle 30 progressively decreases, from the maximum width in the median region of the handle 30 to the free end 31, where said width has a value substantially equal to that of the region where the first shoulder 33 is provided. Similarly, the cross section contour of the handle 30 is progressively reduced from its maximum value at the second shoulder 34, until reaching the free end 31 of the handle 30.

In the illustrated constructions, the handle is constructed to present a distance between the first shoulder 33 and the second shoulder 34 corresponding to about 70-90% the total length of the handle 30, the remaining of said length being completed by the distance of the second shoulder 34 to the free end 31.

As better illustrated in figures 1, 4, 6 and 7, the handle 30 has a curvature that develops along the median longitudinal plane P, intercepting the front and rear faces 30a and 30b of the handle 30, in order to make convex said front face 30a and concave said rear face 30b.

The curvature of the rear face 30b is made so as to define, at the opposite end 32 of the handle 30, a thumb supporting rear region 35a, to be used when the toothbrush is gripped with the bristles 20 turned away from the user, as illustrated in figure 5, said gripping being denominated herein the second gripping condition.

In the embodiment illustrated in figures 1-6, the first shoulder 33 and the second shoulder 34 have a width that is equal to the width of the region of the handle 30 where they are provided, said shoulders being defined by ramps matching with the respective front face 30a and rear face 30b, from which they project.

According to the longitudinal curvature imparted to

the handle 30, its front face 30a is defined by a convex arc, extending, with at least one radius of curvature, from the region of the first shoulder 33, to the free end 31a of the handle 30. Similarly, the rear face 30b of the handle 30 is defined by a concave arc, extending, with at least one radius of curvature, from the region of the first shoulder 33, where it defines the thumb supporting rear region 35a, to the free end 31 of the handle 30.

10 In the embodiment illustrated in figures 1-6, the rear face 30b of the handle 30, between the second shoulder 34 and the free end 31, is in the form of a rear surface 30c converging with the corresponding portion of the front face 30a of the handle 30 and matching
15 with the second shoulder 34, said rear surface 30c being preferably shaped in a slightly convex way.

The construction of the handle described above allows that, in the first gripping condition illustrated in figure 3, the user's thumb be seated against the thumb supporting front region 33a, close to the first shoulder 33, whereas the little and the ring fingers are seated on the rear face 30b, close to the second shoulder 34, and the palm of the hand is pressed against the front face 30a, in a convex arc, in the
20 region of the latter close to the second shoulder 34, where both the thickness and the width of the handle 30 are larger. The correct positioning of the use's fingers, particularly his thumb in the region with the smallest cross section, allows for a more precise
25 directional control of the movements to be imparted to the head 10 of the toothbrush during brushing. The thumb remains in an advanced position, anchored by the first shoulder 33, while the other fingers and the palm of the hand find a cross section of larger
30 dimensi n, with the little finger and the ring finger
35

of the user being each seated on one of the opposite sides of the second shoulder 34, assuring a better and safer prehension of the handle, giving firmness and comfort to the grip. The first and the second
5 shoulders 33, 34 induce the user to correctly position his thumb, little finger, and ring finger, making difficult the improper use of the toothbrush.

In the second gripping condition illustrated in figure 5, the user's thumb is seated against the thumb supporting rear region 35a, on the rear face 30b of
10 the handle 30, while the little and the ring fingers are seated against the front face 30a, in a convex arc, of the handle 30, in the region of said front face 30a with a larger cross section and where the
15 latter becomes convergent in relation to the rear face 30c of the free end 31 of the handle 30. In this second gripping condition, the little finger tends to embrace the rear face 30b of the handle 30, close to the second shoulder 34, giving stability to the grip
20 of the handle. The increase of the cross section has the effect of improving the prehension of the handle 30, as already mentioned in relation to the first gripping condition. It should be further observed that the thumb seated on the thumb supporting rear region
25 35a also remains in an advanced position, facilitating to direct the movements to be imparted to the head 10, i.e., giving more acuity to the movements of the toothbrush.

Still according to the illustrated embodiments, the
30 neck 40 has a width that decreases from a value equal to that of the width of the handle 30, at the adjacent region of the first shoulder 33, to a minimum value, at the region where it is connected to the head 10. The front face 40a of the neck 40 matches with the
35 first shoulder 33 by means of a concave matching

surface 43, usually in the form of a cylindrical surface.

The neck 40 and the head 10 can present the rear faces 40b and 10b defined in the same convex surface that matches with the concave rear face 30b of the handle 30 by means of the thumb supporting rear region 35a, which is preferably offset from the first shoulder 33. Aiming at giving a more ergonomic characteristic to the toothbrush, the neck 40 and the head 10 can be provided according to a longitudinal direction, which forms, on the side of the front face 30a of the handle 30, an obtuse angle in relation to the longitudinal direction of development of the handle 30, with the neck 30 and at least a certain extension of the handle 30, between the first and the second shoulders 33, 34, being laterally defined, in a plan view, by two rectilinear alignments that mutually converge to the direction of the head 10 and which are symmetrical in relation to the median longitudinal plane P.

The embodiment illustrated in figures 7 and 8 is a variant from that described above and is firstly distinguished by the fact that the thumb supporting rear region 35a is defined by a third shoulder 35 located opposite to the first shoulder 33 and defined by a ramp that matches with the rear face 30b of the handle 30, from which it projects. The third shoulder 35 enhances the thumb supporting rear region 35a.

In the embodiment of figures 7 and 8, the handle now incorporates, in the region of the first and third shoulders 33, 35, a pair of first lateral shoulders 36, which are opposite to each other and slightly project from the contour of the handle 30, each first lateral shoulder 36 being defined by a pair of opposite ramps matching with each other and with the adjacent face of the handle 30, from which projects

the respective first lateral shoulder 36.

This construction gives the handle 30 a lateral widening for both sides in the region of the first and the second shoulders 33, 35, further improving the comfort for both the seating of the fingers and the gripping on the handle 30 of the toothbrush.

In this constructive variant, the handle 30 further incorporates, on its rear face 30b, a fourth shoulder 37, which maintains with the third shoulder 35 a spacing sufficient to adapt one of the user's fingers, either the forefinger or the thumb tip, upon gripping the handle 30 in the conditions illustrated in figures 3, 4, 5 and 6.

As illustrated in figures 7 and 8, the fourth shoulder 37 is defined by a pair of opposite ramps, matching with each other and with the rear face 30b of the handle 30, on both sides of the fourth shoulder 37.

Aiming at further increasing the grip, the handle 30 can incorporate a pair of second lateral shoulders 38, opposite to each other and slightly projecting from the contour of the handle 30 in the region of the latter where is provided the fourth shoulder 37, each second lateral shoulder 38 being defined by a pair of opposite ramps, matching with each other and with the adjacent face of the handle 30, from which projects the respective second lateral shoulder 38.

As it can be noted, the constructive variant illustrated in figures 7 and 8 provides a toothbrush, whose handle 30 still maintains a cross section contour that generally increases from the thumb supporting front region 33a to the second shoulder 34, although said increase of the cross section contour is interrupted in the region where the fourth shoulder 37 and the second lateral shoulders 38 are provided.

Thus, while in both constructive forms the cross

section contour of the handle 30 generally increases between the thumb supporting front region 33a and the second shoulder 34, only in the first embodiment illustrated in figures 1-6 said cross section contour increases continuously.

While only two embodiments of the present invention have been described and illustrated, it should be understood that alterations in the form of the constructions might be effected, without departing from the inventive concept defined in the claims that accompany the present disclosure.

CLAIMS

1. A toothbrush comprising a head (10), having a front face (10a) constructed to carry a group of bristles (20); an elongated handle (30), having a free end (31), an opposite end (32), a front face (30a), and a rear face (30b); and a neck (40), connecting the opposite end (32) of the handle (30) to the head (10), characterized in that the handle (30) comprises a first shoulder (33) defining a thumb supporting front region (33a) and which is provided on the front face (30a) of the handle (30) at its opposite end (32); a second shoulder (34) having opposite sides for supporting the little finger and the ring finger, respectively, and which is provided on the rear face (30b) of the handle (30) spaced from the free end (31) of the latter, said first and second shoulders (33, 34) being used when the toothbrush is gripped with the bristles (20) turned to the user; and a thumb supporting rear region (35a) provided on the rear face (30b) of the handle (30), close to its opposite end (32), in order to be used when the toothbrush is gripped with the bristles (20) turned away from the user, the handle (30) having a cross section contour that generally increases from the thumb supporting front region (33a), close to the first shoulder (33), to the second shoulder (34).

2. Toothbrush, according to claim 1, characterized in that the first and second shoulders (33, 34) are defined by ramps matching with the respective front face (30a) and rear face (30b) of the handle (30), from which said shoulders project.

3. Toothbrush, according to claim 1, characterized in that the width of the handle (30) decreases progressively, from the maximum width in the second

shoulder (34), to the free end (31), where it has a value substantially equal to that of the region in which the first shoulder (33) is provided.

4. Toothbrush, according to claim 3, characterized in that the free end (31) of the handle (30) is rounded and matches with the cross section contour of the handle (30) in this region.

5. Toothbrush, according to claim 1, characterized in that the cross section contour of the handle (30) is progressively reduced, from its maximum value at the second shoulder (34), until reaching the free end (31) of the handle (30).

6. Toothbrush, according to claim 1, characterized in that the distance between the first shoulder (33) and the second shoulder (34) corresponds to about 70-90% the length of the handle (30).

7. Toothbrush, according to claim 1, characterized in that the handle (30) has a curvature along a longitudinal median plane (P) intercepting the front face (30a) and rear face (30b) of the handle (30), in order to make convex the front face (30a) and concave the rear face (30b).

8. Toothbrush, according to claim 7, characterized in that said thumb supporting rear region (35a) is defined by the curvature of the rear face (30b) close to the opposite end (32) of the handle (30).

9. Toothbrush, according to claim 7, characterized in that the thumb supporting rear region (35a) is defined by a third shoulder (35) opposite to the first shoulder (33).

10. Toothbrush, according to claim 9, characterized in that the third shoulder (35) is defined by a ramp matching with the rear face (30b) of the handle (30) from which it projects.

11. Toothbrush, according to claim 9, characterized in

that the handle (30) incorporates, in the region of the first and third shoulders (33, 35), a pair of first lateral shoulders (36), which are opposite to each other and slightly project from the contour of the handle (30), each first lateral shoulder (36) being defined by a pair of opposite ramps matching with each other and with the adjacent face of the handle (30), from which projects the respective first lateral shoulder (36).

10 12. Toothbrush, according to claim 9, characterized in that the handle (30) incorporates, on its rear face (30b), a fourth shoulder (37), which maintains with the third shoulder (35) a spacing sufficient to adapt one of the user's fingers, upon gripping the handle
15 (30).

13. Toothbrush, according to claim 12, characterized in that the fourth shoulder (37) is defined by a pair of opposite ramps, matching with each other and with the rear face (30b) of the handle (30), on both sides
20 of the fourth shoulder (37).

14. Toothbrush, according to claim 12, characterized in that the handle (30) incorporates a pair of second lateral shoulders (38), opposite to each other and slightly projecting from the contour of the handle (30) in the region of the latter where is provided the fourth shoulder (37).

15. Toothbrush, according to claim 14, characterized in that each second lateral shoulder (38) is defined by a pair of opposite ramps, matching with each other and with the adjacent face of the handle (30), from
30 which projects the respective second lateral shoulder (38).

16. Toothbrush, according to claim 7, characterized in that the front face (30a) of the handle (30) extends
35 in a convex arc, with at least one radius of

curvature, from the thumb supporting front region (33a), close to the first shoulder (33), to the free end (31) of the handle (30).

17. Toothbrush, according to claim 12, characterized
5 in that the rear face (30b) of the handle (30), between the second shoulder (34) and the free end (31), is in the form of a rear surface (30c) converging with the corresponding portion of the front face (30a) of the handle (30) and matching with the
10 second shoulder (34).

18. Toothbrush, according to claim 13, characterized
in that the rear surface (30c) is slightly convex.

19. Toothbrush, according to claim 7, characterized in
that the median longitudinal plane (P) is a plane of
15 symmetry of the handle (30), of the neck (40) and of the head (10).

20. Toothbrush, according to claim 7, characterized in
that the rear face (30b) of the handle (30) is defined
by a concave arc extending, with at least one radius
20 of curvature, from the thumb supporting front region (33a), close to the first shoulder (33), where it defines the thumb supporting rear region (35a), to a region spaced from the free end (31) of the handle (30), where it defines the second shoulder (34).

21. Toothbrush, according to claim 7, characterized in
that the width of the neck (40) decreases from a value
that is equal to the width of the handle (30), at the
adjacent thumb supporting front region (33a), close to
the first shoulder (33), to a minimum value, at the
30 region in which it is joined to the head (10).

22. Toothbrush, according to claim 7, characterized in
that the neck (40) and the head (10) have a rear face
(40b, 10b) defined by a convex surface matching with
the concave rear face (30b) of the handle (30) by
35 means of the thumb supporting rear region (35a)

located slightly offset from the first shoulder (33).

23. Toothbrush, according to claim 12, characterized in that the neck (40) and the head (10) are provided according to a longitudinal direction, which forms, on
5 the side of the front face (30a) of the handle (30), an obtuse angle in relation to the longitudinal direction of development of the handle (30).

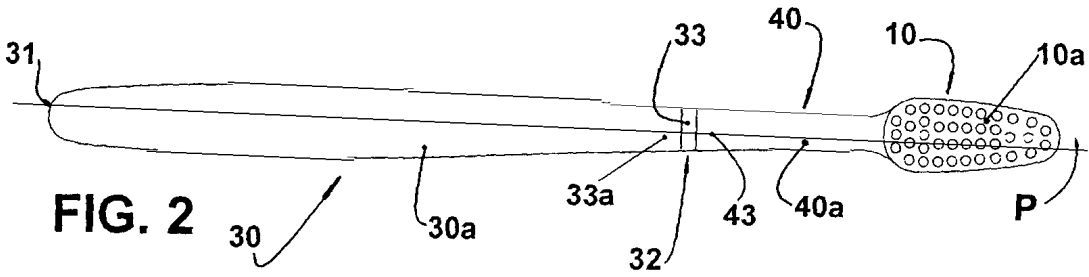
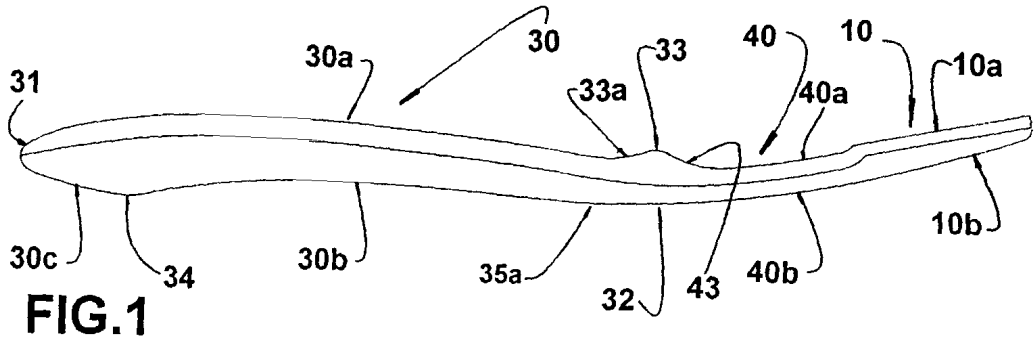
24. Toothbrush, according to claim 17, characterized in that the neck (40) and at least a certain extension
10 of the handle (30), between the first shoulder (33) and the second shoulder (34), present a lateral contour defined by two rectilinear alignments, mutually converging to the direction of the head (10) and which are symmetrical in relation to the median
15 longitudinal plane (P).

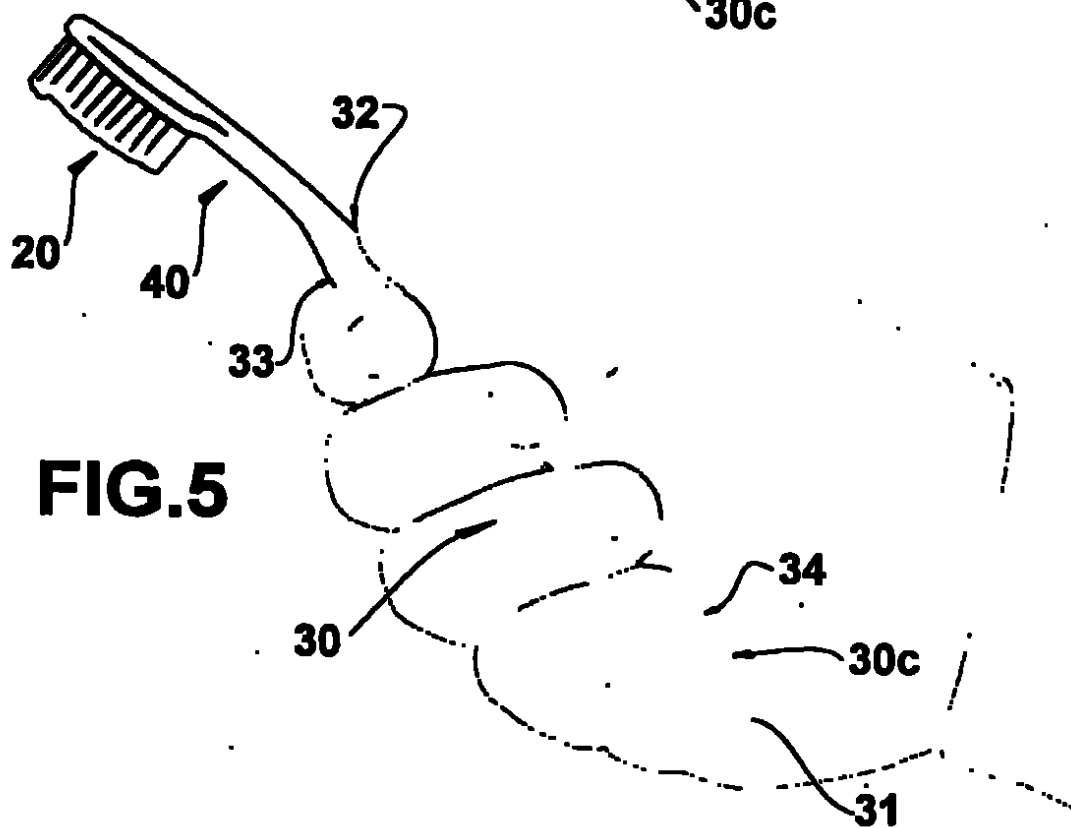
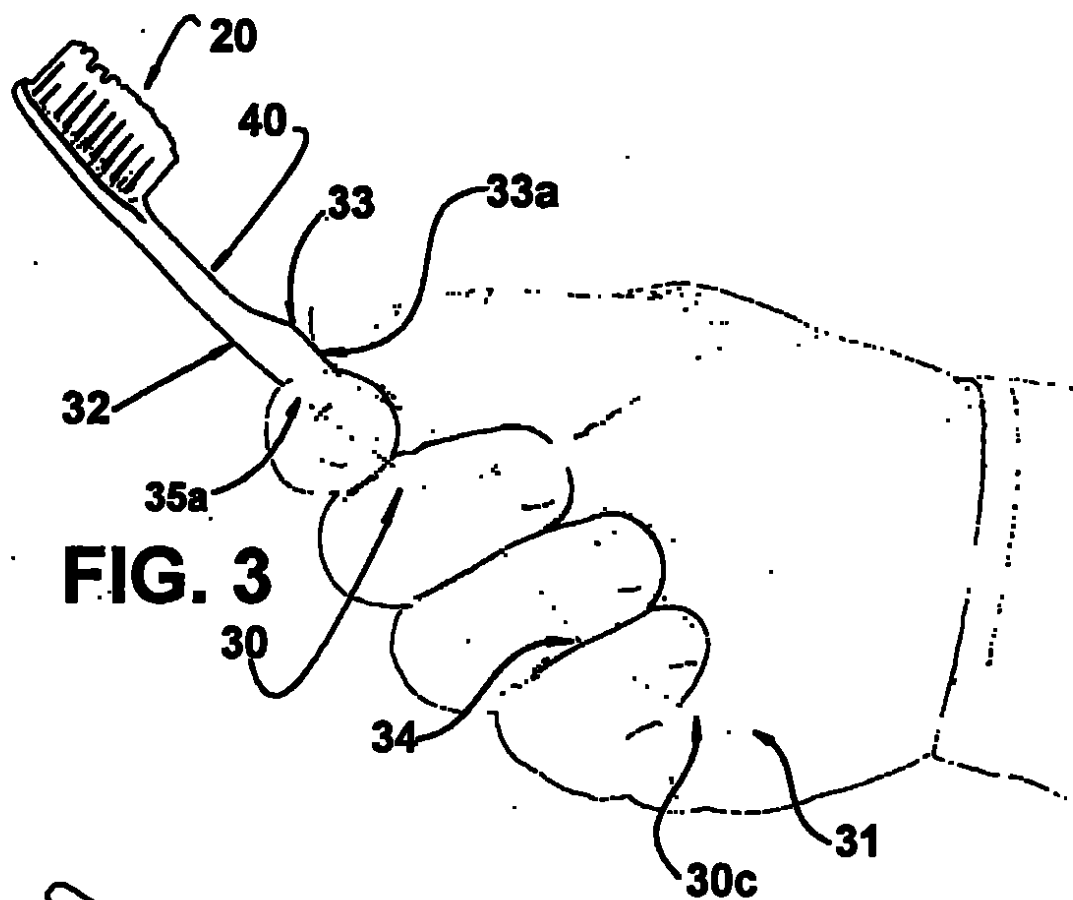
25. Toothbrush, according to claim 1, characterized in that the neck (40) has a front face (40a) matching with the first shoulder (33) by means of a concave matching surface (43).

20 26. Toothbrush, according to claim 1, characterized in that the cross section of the handle (30) presents a contour that increases continuously and progressively from the thumb supporting front region (33a), close to the first shoulder (33), to the second shoulder (34).

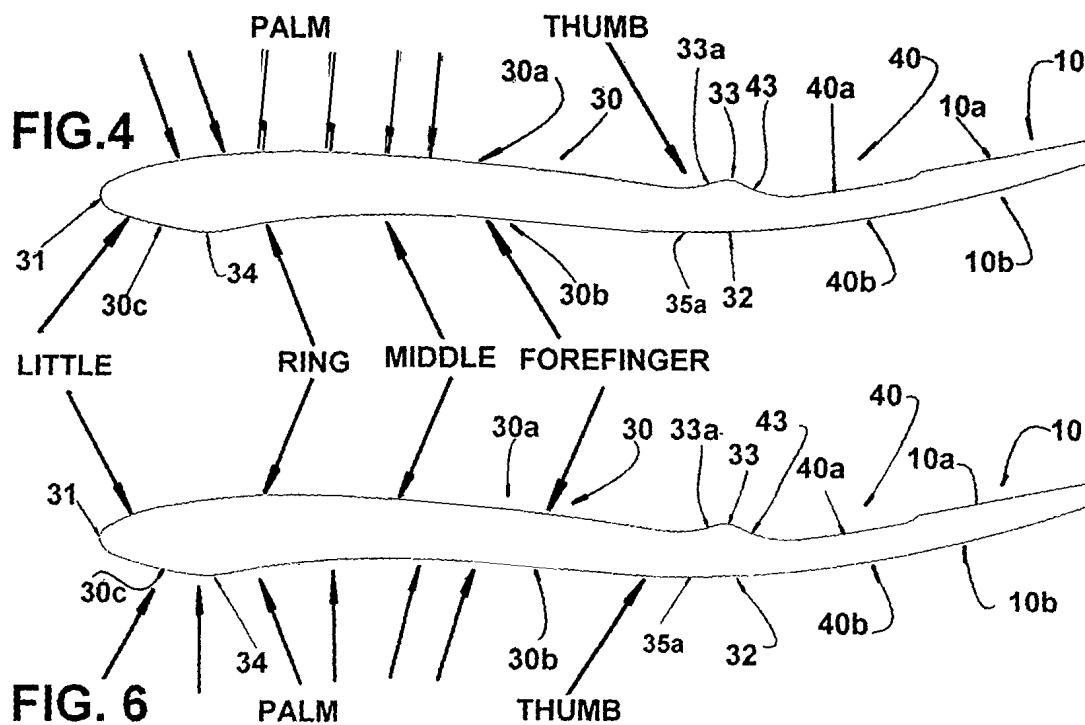
25 27. Toothbrush, according to claim 26, characterized in that the first and the second shoulders (33, 34) present a width that is equal to the width of the region of the handle (30) in which they are provided.

30 28. Toothbrush, according to claim 26, characterized in that the handle (30) has a cross section that increases continuously from the thumb supporting front region (33a) to the second shoulder (34).





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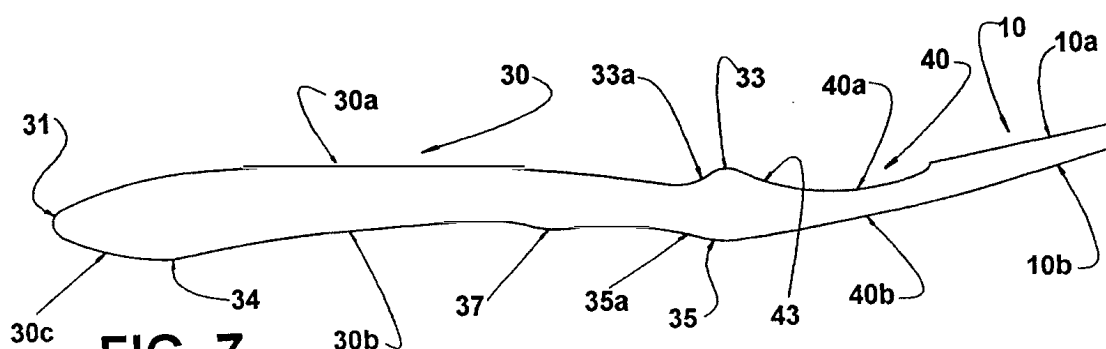


FIG. 7

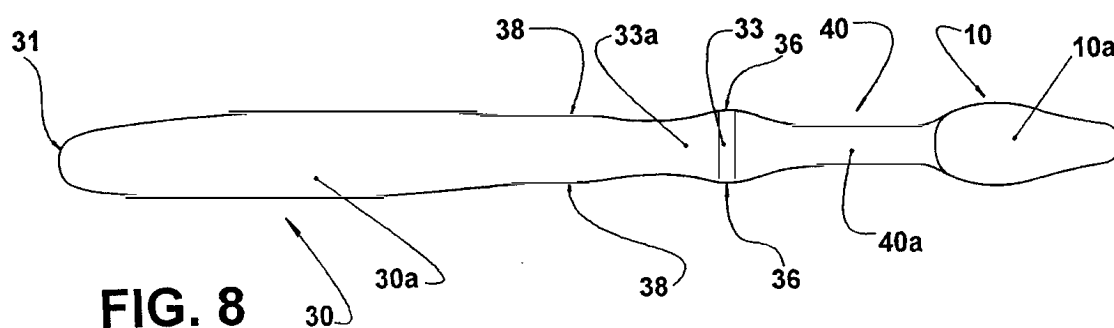


FIG. 8

INTERNATIONAL SEARCH REPORT

Internal Application No
PCT/BR 02/00170A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A46B5/02

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)

IPC 7 A46B

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 practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 749 116 A (OECHSLIN THOMAS A ET AL) 12 May 1998 (1998-05-12) the whole document	1-10, 12, 13, 16-21, 23, 25
Y		11, 22
Y	EP 0 580 406 A (JOHNSON & JOHNSON CONSUMER) 26 January 1994 (1994-01-26) the whole document	11
Y	WO 01 15567 A (GILLETTE CANADA COMPANY ; LEWENCZUK JEFFREY S (US); SZCZECZ GERALD) 8 March 2001 (2001-03-08) the whole document	1-6, 22, 25
	— — — — — -/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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"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
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Date of the actual completion of the international search

7 March 2003

Date of mailing of the international search report

17/03/2003

Name and mailing address of the ISA

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Authorized officer

Neillier, F

INTERNATIONAL SEARCH REPORT

Intern. M Application No
PCT/BR 02/00170

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 780 924 A (HANSEN PAUL D ET AL) 1 November 1988 (1988-11-01) the whole document	1-6, 25

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern. Application No
PCT/BR 02/00170

102

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US 4780924	A	01-11-1988	US 4850735 A	25-07-1989



(11) Publication number: 0 580 406 A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: 93305698.2
Date of filing: 20.07.93

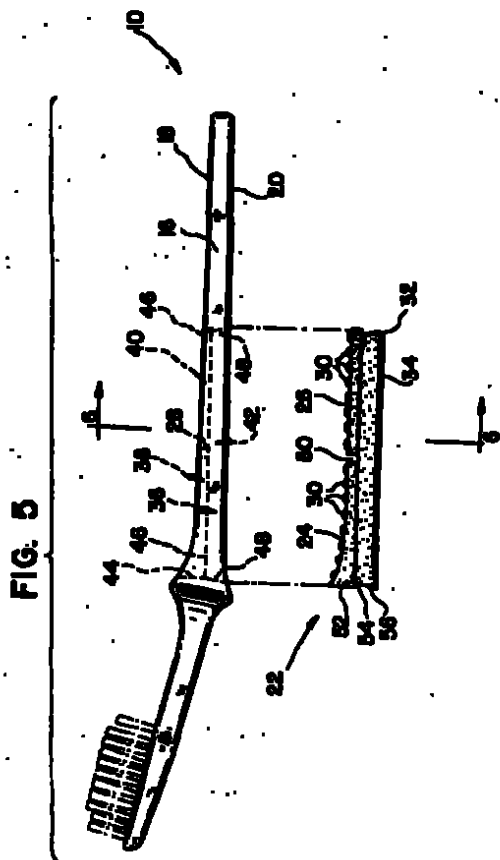
(51) Int. Cl.⁸: A46B 5/02, B25G 1/10

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(24) Toothbrush having non-slip surface.

(57) A toothbrush (10) having a non-slip region (22) on its handle (16) to facilitate better manipulation of the brush is disclosed. An insert (22) having a surface with raised ribs (30) is formed in a separate molding operation and then inserted within an aperture (36) formed in the toothbrush handle (16). A method for manufacturing the toothbrush is also disclosed.



EP 0 580 406 A1

Jouva, 18, rue Saint-Denis, 75001 PARIS

Field of the invention

The present invention relates to a toothbrush, and more particularly to a toothbrush handle having a non-slip surface.

Background of the invention

Various techniques have been suggested for modifying the handle of a toothbrush to facilitate better manipulation of the brush during use. For instance, U.S. Patent No. 2,179,266 to Lukanbill describes a grip attachment in the form of a tubular sleeve containing opposed bearing portions for engaging the thumb and index finger of the user's hand. In one embodiment, the attachment is fabricated from a rubber-like material which allows the tubular sleeve to be stretched over the toothbrush handle and frictionally engage the underlying surfaces of the handle. Each of the bearing surfaces on the sleeve have an area which is larger than that of the handle, which makes it easier for the user to grip the toothbrush.

U.S. Patent No. 4,283,808 to Beebe also describes a detachable gripping device for a toothbrush. The device consists of an elongated plastic foam body having a diameter which can be readily gripped by the user of the toothbrush. The plastic body also includes a centrally disposed longitudinal slot adapted to receive and engage the toothbrush handle.

Gripping devices which are not detachable, but integrally formed in the toothbrush handle, have also been suggested. U.S. Patent No. 2,094,240 to Herrick, et al., describes a toothbrush handle having a pair of shallow cavities disposed in an opposed configuration to receive the thumb and index finger of the user. The floor of each cavity contains a plurality of grooves, which form a non-slip surface for engagement by the user's finger and thumb.

Other techniques for providing a non-slip surface on a toothbrush include texturing selected portions of the handle. For example, U.S. Patent No. 4,137,593 to Porper describes a toothbrush handle with a serrated or ribbed surface. The serrated or ribbed surface is formed on the portion of the toothbrush handle that is engaged by the user's thumb. U.S. Patent No. 4,872,706 to Hill also describes a toothbrush handle which is textured to provide a non-slip gripping surface. The textured portion of the handle has a substantially elliptical cross-section and the texturing extends around the entire periphery of the handle.

Toothbrushes having a handle portion fabricated from two different materials are also known. U.S. Patent No. 5,054,154 to Schiffer, et al., describes a toothbrush having a handle and a bristled head which are connected by a neck portion. A series of clearances, slots or grooves, filled with an elastic, rubbery material, are formed in the portion of the handle adjacent the neck. The filling of these clearances, slots or

grooves with the rubbery material takes place after the toothbrush handle and head have been manufactured. These rubber-filled areas form an elastic, flexible zone in the toothbrush which causes the bristled head to deflect or move out of the way when excessive force is used to brush the teeth. This feature is said to prevent injury to the gums and teeth in the event of excessive brushing pressure.

Toothbrushes having raised rib portions on the handle have also been suggested. U.S. Design Patent Nos. 318,716 and 324,775 to Kreisher, et al., are examples of such toothbrushes. These ribs are often fabricated from a material which is different from the remainder of the toothbrush. Toothbrushes containing raised rubber ridges or dimples are commercially available.

A fully automated process for forming toothbrush handles from separate or different colored materials is described in an article entitled "Zahoransky's Fully Automatic Two-Color Mold," *Brosse Press*, 1989. This automated process avoids the need to mount or paste the second material, such as rubber, manually onto the toothbrush handle. In the first step of the process, the plastic material which forms the bulk of the toothbrush is vertically injected into the cavity of the mold. The resulting structure is a partially formed toothbrush having a handle with a series of void spaces. The partially formed toothbrush is then automatically moved into a second cavity within the same mold, where a second or different colored material is injected horizontally to complete the toothbrush handle. The second mold cavity is generally contoured so that raised ribs or dimples are formed on the toothbrush handle to provide a non-slip surface. Generally, the first material forming the bulk of the toothbrush is polypropylene while the second material is Santoprene® rubber. The same material, but colored with two different pigments, may also be used in the process to form a multi-colored toothbrush.

The second material injected into the partially formed toothbrush fuses with the polypropylene or other material forming the bulk of the handle. This second material cannot be torn from the handle, and remains durable for the lifetime of the article.

These automated two-color or two-material molds produce bicomponent toothbrushes of good quality. However, the capital investment for this equipment is significant, so it is generally only used in manufacturing facilities where the level of output justifies the capital cost. In plants where there is insignificant volume to justify this level of capital investment, a need has developed for a bicomponent toothbrush having a non-slip handle which can be manufactured with conventional molding equipment.

Summary of the invention

The present invention relates to a toothbrush

having a bristled head connected to a handle. An aperture is formed in the toothbrush, and defines an opening in at least one surface of the handle. An insert having at least one non-slip surface is disposed in the aperture, so that the non-slip surface is exposed through the opening formed in the handle.

The insert is not formed in situ within the handle as in the Zahoransky process, but is manufactured in a separate mold and then inserted into the aperture. A securing means may also be provided for securing the insert within the aperture. In one preferred form, a region of the insert wall is disposed in an interlocking relationship with a region of the aperture wall, thereby securing the insert to the handle. If the aperture is fabricated from a material which is sufficiently compressible, it is simply compression-fit within the aperture.

The aperture may also extend through the handle, so that an opening is formed on both the top and bottom surface of the toothbrush. The insert has a non-slip surface on its top and bottom surfaces, so that non-slip regions are formed on the top and bottom surfaces of the handles.

The present invention also includes a method for forming the toothbrush having a non-slip surface on the handle.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the toothbrush in accordance with the present invention.

FIG. 2 is a bottom plan view of the toothbrush of FIG. 1.

FIG. 3 is a top plan view of the toothbrush of FIG. 1 with the insert removed.

FIG. 4 is a longitudinal cross-sectional view of the toothbrush of FIG. 3 with the insert removed taken along line 4-4.

FIG. 5 is a side view of the toothbrush of FIG. 1 with the insert removed from the handle.

FIG. 6 is an enlarged cross-sectional view of the handle and insert taken along line 6-6 of FIG. 5.

FIG. 7a, FIG. 7b and FIG. 7c are alternative, enlarged cross-sectional views of the handle and insert sections shown in FIG. 6.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, where like reference numerals have been used to designate like or similar elements, there is shown in FIGS. 1 and 2 a toothbrush of the present invention having the general designation 10. The toothbrush 10 has a head 12 with a plurality of bristles 14. The head 12 is connected to a handle 16 having a top surface 18 and a bottom surface 20. Although the toothbrush handle 16 is shown to be substantially rectangular, with the top

and bottom surfaces 18 and 20, respectively, forming opposed major surfaces, it should be understood that virtually any handle configuration may be employed in the present invention, including a cylindrical handle with only one major surface.

The handle 16 contains an insert 22 which is disposed in the portion of the handle that is typically engaged by the thumb and index finger of the user's hand. The insert 22 contains a first non-slip surface 24 and a second non-slip surface 26 generally contiguous with the top surface 18 of the handle 16. The non-slip surfaces 24 and 26 contain a plurality of raised ribs 30 which form non-slip regions on the top surface 18 of the handle 16. These non-slip regions are engaged by the user's thumb to facilitate better manipulation of the brush.

Although the toothbrush 10 is shown as having an insert 22 with non-slip surfaces 24 and 26 separated by a bridge portion 28 in the handle 16, it should be understood that virtually any configuration of the insert within the handle may be employed. For example, it may be desirable to eliminate the bridge portion 28 in the handle 16 so that the non-slip region is continuous along the top surface 18. It may also be desirable to have a plurality of inserts disposed in the handle 16. Furthermore, the transverse ribs 30 may be replaced with raised dimples, longitudinal ribs or other textured patterns. Depending upon the material employed to fabricate the insert 22, the non-slip surface may be smooth so long as it provides a good gripping surface for the user's thumb and fingers.

As shown in FIG. 2, the insert 22 also comprises a bottom non-slip surface 32 containing a plurality of longitudinal ribs 34. This non-slip surface 32 forms a non-slip region on the bottom surface 20 of the handle 16, which is typically engaged by the user's fingers during brushing. As with the non-slip regions formed in the top surface 18, a plurality of such regions may be formed in the bottom surface 20 and the configuration of the non-slip surface 32 may be varied as discussed above.

Turning now to FIGS. 3-6, the means for securing the insert within the handle 20 will be discussed in detail. As shown in FIG. 4, the handle 20 contains an aperture generally designated as 36 extending from the top surface 18 to the bottom surface 20. This aperture 36 is dimensioned to receive and hold the insert 22 within the handle 16. The aperture 36 forms first and second openings 38 and 40, respectively, in the top surface 18 which are separated by the handle rib portion 28. The aperture 36 also forms a single opening 42 in the bottom surface 20 of the handle 16.

The aperture 36 contains an upper wall 44 which is separated from a beveled, lower wall 46 by a shoulder portion 48. As shown in FIGS. 3 and 5, the shoulder portion 48 extends around the entire periphery of the aperture 36. As shown in FIG. 6, the beveled, lower wall 46 bevels outwardly from the shoulder portion

48 toward the bottom surface 20.

As shown in FIG. 5, the insert 22 contains a notch portion 50 which is dimensioned to receive the bridge 28 formed in the handle 16. The insert 22 also contains an upper wall 52 which is separated from a beveled, lower wall 56 by a shoulder portion 54. The shoulder portion 54 extends around the entire periphery of the insert 22.

When the insert 22 is placed within the handle 20 through the bottom opening 42, the aperture shoulder portion 48 engages the insert shoulder portion 54 in an interlocking relationship, thereby defining an interlocking zone for securing the insert 22 within the aperture 36. The notch portion 50 of the insert 22 engages the bridge portion 28 of the handle 16 to further secure the insert. The lower beveled wall 48 of the aperture 36 also engages the lower, beveled wall 56 of the insert 22 in an interlocking relationship to form an additional interlocking zone for securing the insert 22 within the handle 16.

FIGs. 7a, 7b and 7c show several alternative cross-sectional configurations for the aperture and insert walls. In FIG. 7a, the aperture wall in the handle 16 contains a recess 58 which engages a projection 60 formed on the wall of the insert 22.

FIG. 7b shows a similar configuration wherein a pair of concave recesses 62 is formed on the aperture wall in the handle 16. A corresponding pair of convex projections 64 is formed along the wall of the insert 22.

FIG. 7c shows a beveled recess 66 formed on the wall of the aperture in the handle 16. A corresponding beveled projection 68 is formed along the wall of the insert 22. In FIGs. 7a, 7b and 7c, when the insert 22 is placed within the aperture, the projection(s) formed along the wall of the insert 22 engages the recess(es) formed in the wall of the aperture in the handle 16 in an interlocking relationship to form interlocking zone(s) for securing the insert to the handle 16.

The head 12 and the handle 16 of the toothbrush 10 may be molded from a thermoplastic polymer, such as styrene-acrylonitrile copolymers, polypropylene, cellulose acetate, cellulose acetate propionate, and polymethyl methacrylate. The head 12 and the handle 16, containing the aperture 36, may be molded in conventional injection molding equipment.

The bristles 14 are then inserted in the toothbrush head using conventional bristling equipment, e.g. Boucherie, Zahoransky or Evans machines. The bristles 14 are fabricated from various plastic materials, such as polyamides, polyolefins, polyesters, or natural fibers, such as animal hair. Preferably the bristles 14 are nylon.

The insert 22 is fabricated from a material which is compressible, so that this member may be inserted within the handle aperture 36. The insert 22 may be fabricated from an elastomeric material, such as neoprene, urethane, silicone rubber or RTV silicone, and

preferably from a thermoplastic injection moldable rubber, such as Santoprene® rubber available from Monsanto Chemical Co. The insert 22 is generally dimensioned slightly larger than the aperture 36 in both the longitudinal and transverse directions so that it is compression-fit within the handle 16. As used herein, compression-fit means that the insert 22 is compressed when it is inserted into the aperture 36, so that the insert walls frictionally engage the walls of the aperture 36. The insert 22 may be molded in conventional injection molding equipment.

Alternatively, if the material used to fabricate the handle 16 is sufficiently pliable, the insert 22 may be fabricated from a material which is not readily compressed, such as metals or hard plastics. For example, the insert 22 may be molded from aluminum, and then inserted into the handle 16 having a pliable aperture wall. The wall must be capable of deforming to the extent necessary for the insert 22 to be inserted into the aperture, so that the opposed shoulders 48 and 54, or the projections and recesses shown in FIGs. 7a, 7b and 7c, interlock to secure the insert 22 within the handle 16.

Conventional molding equipment is used to manufacture the toothbrush 10. The toothbrush 10, comprising the head 12 and the handle 16, is formed in a separate molding operation from the insert 22. Once the two component parts are formed, the insert 22 is then inserted within the handle aperture 36 in an interlocking relationship, so as to secure the insert within the toothbrush handle 16. This step may be done either manually or with automated equipment. The tufting operation for the bristles 14 may be carried out during virtually any stage of the manufacturing process.

The foregoing description and drawings are intended to be illustrative of the present invention. Various changes and modifications can be made to the above-described embodiments without departing from the spirit and scope of the present invention.

Claims

1. A toothbrush, comprising:
 - a handle having at least one surface;
 - a bristled head connected to said handle;
 - an aperture disposed in said handle and forming an opening in said surface; and
 - an insert having at least one non-slip surface disposed in said aperture, said non-slip surface being exposed through said opening and forming a non-slip region on said handle surface.
2. A toothbrush according to claim 1, further comprising a securing means for securing said insert within said aperture.

3. A toothbrush according to claim 2, wherein said securing means comprises a region of said insert disposed in an interlocking relationship with a region of said aperture, thereby forming an interlocking zone for securing said insert to said aperture. 5
4. A toothbrush according to claim 3, wherein said aperture and said insert each having at least one wall, and said interlocking zone comprises a shoulder on said aperture wall interlocking with a shoulder on said insert wall. 10
5. A toothbrush according to claim 4, further comprising an additional interlocking zone comprising a beveled portion of said aperture wall interlocking with a beveled portion of said insert wall. 15
6. A toothbrush according to claim 5, wherein said beveled portion of said aperture wall being beveled outwardly from said aperture shoulder to said opening and said beveled portion of said insert wall being beveled outwardly from said insert shoulder to said non-slip surface. 20
7. A toothbrush according to claim 3, wherein said insert comprises a compressible material and is compression-fit within said aperture. 25
8. A toothbrush according to claim 3, wherein said handle comprises opposed top and bottom surfaces, said aperture extending between said top and bottom surfaces and forming an opening in each of said top and bottom surfaces, and said insert having opposed top and bottom non-slip surfaces exposed through the openings in said handle, thereby forming a non-slip region on each of the opposed top and bottom surfaces of said handle. 30
9. A toothbrush according to claim 8, wherein said handle comprises a plurality of apertures and inserts. 35
10. A toothbrush according to claim 3, wherein said non-slip surface comprises at least one raised rib. 40

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FIG. 1

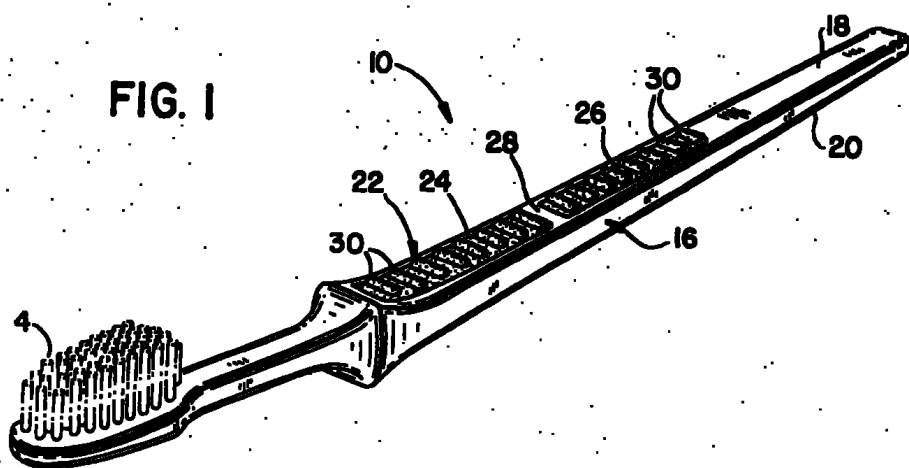


FIG. 2

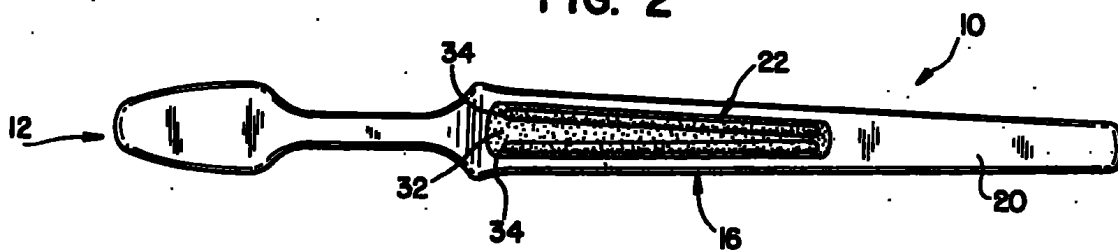


FIG. 3

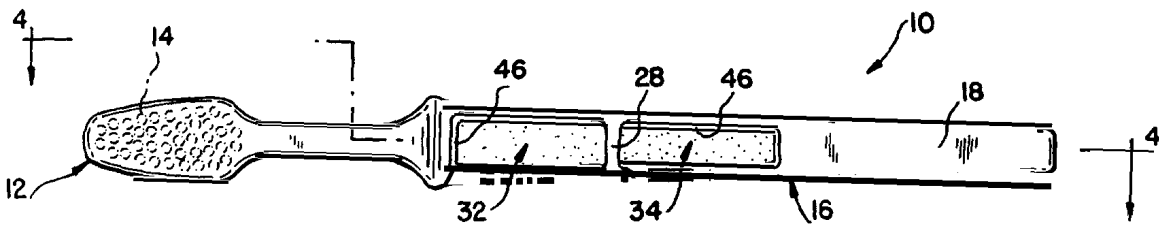


FIG. 4

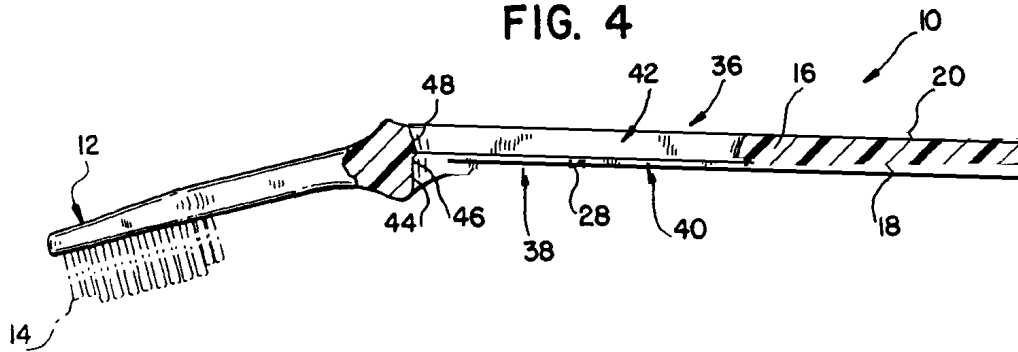


FIG. 5

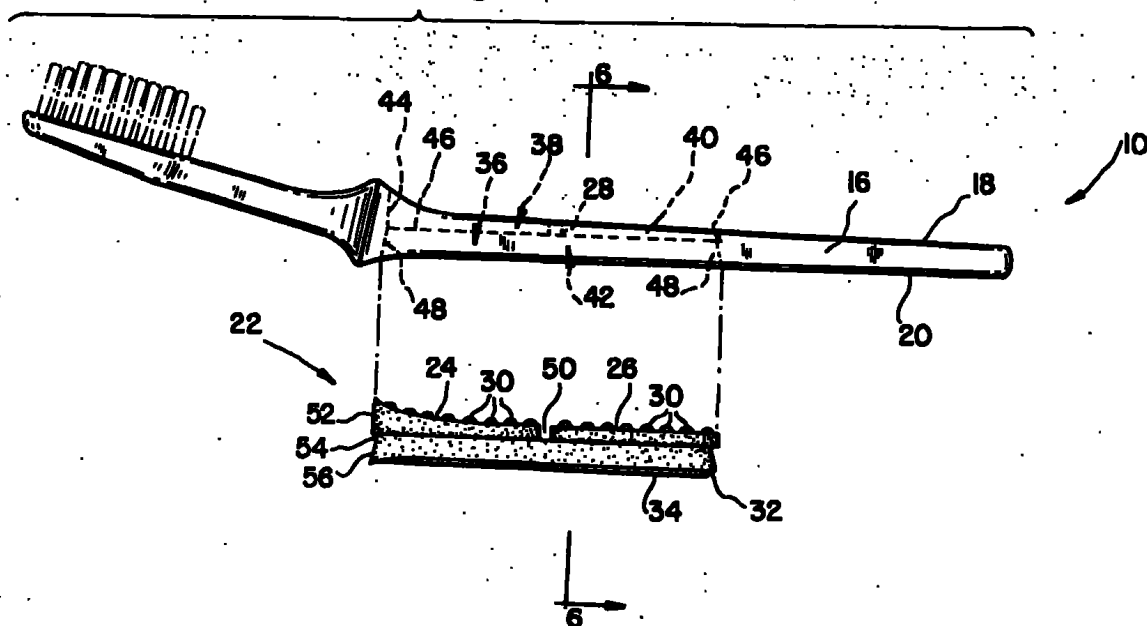


FIG. 6

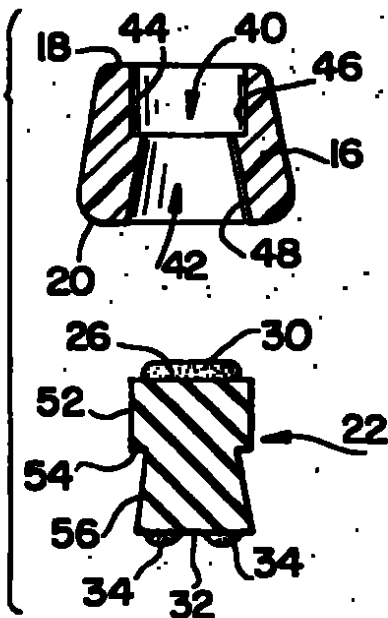


FIG. 7b

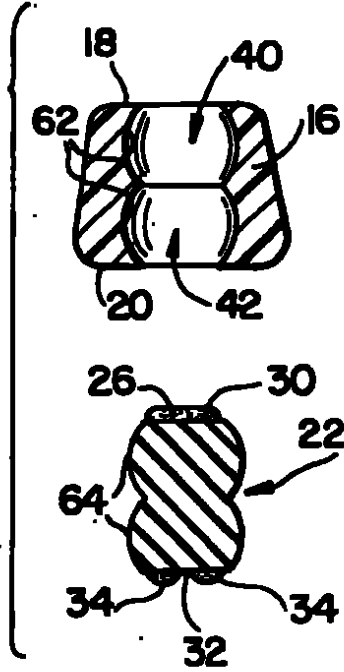


FIG. 7a

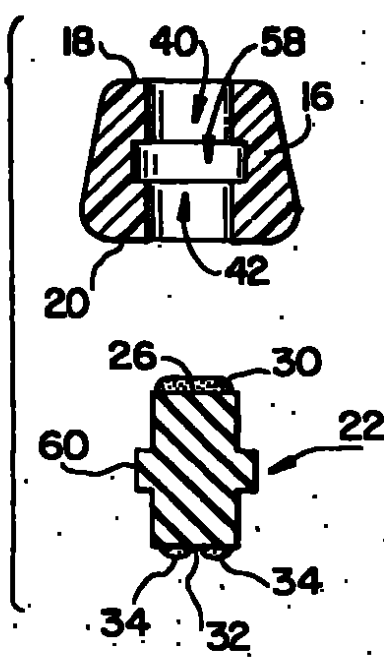
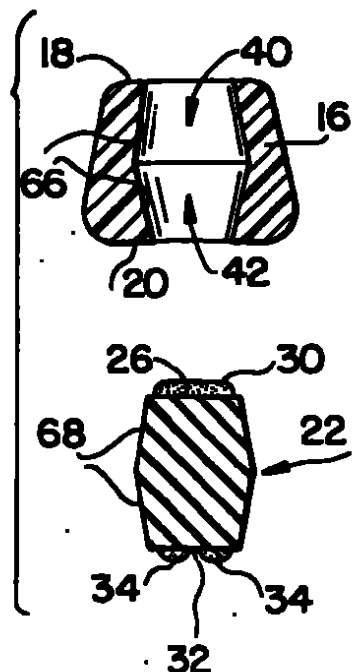


FIG. 7c





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 93 30 5696

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.5)
Y	EP-A-0 336 641 (LINGNER + FISCHER) * column 3, line 39 - column 4, line 3; figures *	1-10	A46B5/02 B25Q1/10
Y	EP-A-0 208 942 (VERA-WERK HERMANN WERNER) * page 10, line 9 - page 12, line 8; figures 7-11 *	1-10	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A46B B25G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 04 OCTOBER 1993	Searcher ERNST R.T.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, not published on, or after the filing date D : document cited in the application L : document cited for other reasons A : member of the same patent family, corresponding document			

REQUISITOS NECESARIOS PARA PRESENTACION Y AGILIZACION DEL TRAMITE

		USUARIO	RADICADOR
PATENTE DE INVENCION ✓	MODELO DE UTILIDAD	()	()
- Indicación de que se solicita la concesión de una patente.		()	()
- Datos de identificación del solicitante o de la persona que se presenta la solicitud.		()	()
- Descripción de la invención.		()	()
- Dibujos de ser estos pertinentes.		()	()
- Comprobante de Pago de las tasas establecidas.		()	()
COMPLETA ()	INCOMPLETA ()	()	()
DISEÑO INDUSTRIAL ()			
- Indicación de que se solicita el registro de Diseño Industrial		()	()
- Datos de identificación del solicitante o de la persona que presenta la solicitud.		()	()
- Representación gráfica o fotográfica del Diseño Industrial o muestra del Material que incorpora el diseño.		()	()
- Comprobante de pago de las tasas establecidas		()	()
COMPLETA ()	INCOMPLETA ()	()	()
ESQUEMA DE TRAZADO ()			
- Indicación de que solicita el registro de un Esquema de trazado.		()	()
- Datos de identificación del solicitante o de la persona que presenta La solicitud.		()	()
- Representación gráfica del esquema de trazado		()	()
- Comprobante de pago de las tasas establecidas.		()	()
COMPLETA ()	INCOMPLETA ()	()	()

Firma Responsable:

Fecha:

2020
Bogotá D C

109

Doctor(a)
JIMENA ESCOBAR URIBE.
Apoderado(a)

Oficio N° 06629

ASUNTO:	Radicación N°	04-56823
	Solicitud internacional	PCT/BR02/0170
	Fecha inicio fase nacional	04/07/2004
	Trámite	011
	Evento	379
	Actuación	416
	Oficio N°	
	Folios	001

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

- La solicitud no contiene copia del documento en que consta la cesión del derecho de patente del inventor al solicitante o a su causante (Art. 26-k) Decisión 486).

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única N° 10 de 2001.


ALIX CARMENZA GÉSPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones.

El anterior requerimiento fue notificado por fijación en lista de fecha, 16 JUL. 2004
202051

ACCION: Consultar Siguiente Anterior Primero Ultimo Salir			
Ver el Siguiente Registro			
SUPERINDUSTRIA Y COMERCIO		SISTEMA DE TRAMITES	
Fecha: 23/09/2005			
CONSULTA RADICACION TRAMITES DIAS ANTERIORES			
No. radicacion	4	56823	0
Sec_cve	0	Sec_act	2
Tramite	11	PCT-PATENTE DE INVENCION CAPITULOS I Y II	
Evento	379	FASE NACIONAL INCLUIDO CAPITULO II	
Actuacion	467	SOLICITUD PRORROGA	
Dep. Origen			
Dep. Destino	2020	DIVISION DE NUEVAS CREACIONES	
Solici/Destinat	ESCOBAR URIBE JIMENA		
Tipo Documento	1	CARTA	Fecha 16/09/2004
Folios	2		
Fecha radicacion	2004-09-16 16:00:09	Tipo Radicacion	EN
Observaciones			
Encontrados (3/4) registro(s)			