



AVISO DE NOTIFICACION
CORREO CERTIFICADO


Industria y Comercio
SUPERINTENDENCIA

Radicación : 3-4732- -24-0 Fecha: 2009-09-28 08:13:14
Trámite : 11 PATENTE I Y II
Evento : 378 FASE NACIONAL I
Actuación : 432 COMUNICAC TOADM
Destinatario : MARGARITA CASTELLANOS ABONDANO Folios 1

Señor (a) (es)
MARGARITA CASTELLANOS ABONDANO
CALLE 94 A NO. 7 A-09
BOGOTA D.C.

Referencia RESOLUCION : 48215
Fecha : 25/09/2009
Expediente : 3-4732
Trámite : 11 PCT-PATENTE DE INVENCION CAPITULOS I Y II
Evento : 378 FASE NACIONAL INCLUIDO CAPITULO I
Actuación : 432 COMUNICACION ACTO ADMINISTRATIVO

Comendidamente le solicito presentarse a este Despacho ubicado en la Carrera 13 No. 27 - 00 Piso Quinto (5), de la ciudad de Bogotá D.C., dentro del término de cinco (5) días hábiles contados a partir del envío de la presente citación, en horario de 8:00 a.m. a 4:30 p.m. jornada continua, con el fin de notificarle personalmente el contenido de la resolución de la referencia proferida dentro del expediente tramitado con el número de radicación citado en el asunto.

De no hacerse presente en el término indicado anteriormente, la providencia en mención se notificará por edicto, el cual se fijará por el término de diez (10) días en el Centro de Documentación e Información.

Para su comodidad el texto completo de la resolución se encontrará disponible en la página web de la Entidad desde el día hábil siguiente al de su notificación, la cual podrá ser consultada desde un computador con acceso a Internet, en la página www.sic.gov.co, con el número de resolución a través de la opción servicios en línea bases de datos - otros servicios - consulta actos administrativos.

En caso de que se haya notificado, haga caso omiso de este aviso.

Secretaría General

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

Al contestar favor indique el número de radicación consignado en el sticker

Sede Centro: Carrera 13 No. 27-00 pisos 2, 5, 7 y 10 PBX: 5870000
Sede CAN: Av. Carrera 50 No. 26- 55 int. 2 Tel 5880070
Call Center 6513240 . Línea 01800-910165
Web: www.sic.gov.co e-mail: info@sic.gov.co
Bogotá D.C. Colombia

REPUBLICA DE COLOMBIA
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

RESOLUCION 48215

Por la cual se otorga una patente de invención

CERTIFICADO

Rad. PCT/ 03-4732

EL SUPERINTENDENTE DE INDUSTRIA Y COMERCIO
en ejercicio de sus facultades legales, en especial de las que se confirieron en el artículo
3, numeral 30 del decreto 3523 de 2009, y

CONSIDERANDO:

PRIMERO: Que la solicitud de patente de invención titulada "VACUNAS PARA PROTECCION DE ESPECTRO AMPLIO CONTRA ENFERMEDADES CAUSADAS POR NEISSERIA MENINGITIDIS", que corresponde a la solicitud internacional PCT/US 01/23842 de fecha 27 de julio del 2001, fue radicada en esta Superintendencia el 24 de enero del 2003 bajo el número 03004732, para que se dé comienzo a la fase nacional en virtud del Tratado de Cooperación en Materia de Patentes (PCT).

SEGUNDO: Que el extracto de esta solicitud fue publicado en la Gaceta de la Propiedad Industrial N° 543 del 01 de septiembre del 2004, sin que se hubieran presentado oposiciones por parte de terceros.

TERCERO: Que realizado el examen de fondo se requirió al solicitante en los términos del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, para que presentara respuesta a las observaciones de carácter técnico visibles a folios 372 a 451 del cuaderno administrativo, relacionadas con la patentabilidad o cumplimiento de los requisitos establecidos por esta Decisión, para la concesión de la patente.

CUARTO: Que el solicitante mediante escrito radicado bajo el número 03-004732-00022-0000 del 24 de agosto del 2009, atendió oportunamente el requerimiento formulado, presentando nuevo folio 456 con el texto de las reivindicaciones que reemplazan las originalmente presentadas, atendiendo de esta manera las observaciones efectuadas en el examen de fondo. El nuevo capítulo reivindicatorio se acepta, como quiera que se ajusta a las prescripciones contenidas en el artículo 34 de la Decisión 486.

QUINTO: Que en virtud de lo dispuesto en el artículo 14 de la Decisión 486 expedida por la Comisión de La Comunidad Andina se otorgarán patentes "...para las invenciones, sean de producto o de procedimiento, en todos los campos de la tecnología, siempre que sean nuevas, tengan nivel inventivo y sean susceptibles de aplicación industrial".

**REPUBLICA DE COLOMBIA
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO**

RESOLUCION 48215

Por la cual se otorga una patente de invención

CERTIFICADO

Rad. PCT/ 03-4732

SEXTO: Que en el presente caso cumplen los requisitos indicados en el numeral anterior las reivindicaciones 1 a 4 contenidas en el folio 456, razón por la cual este Despacho encuentra procedente conceder para las mismas el privilegio de patente solicitado.

RESUELVE:

ARTICULO PRIMERO: Otorgar el privilegio de patente de invención a la solicitud que entró en fase nacional en virtud del Tratado de Cooperación en Materia de Patentes (PCT), para la creación denominada:

**" VACUNAS PARA PROTECCION DE ESPECTRO AMPLIO CONTRA
ENFERMEDADES CAUSADAS POR NEISSERIA MENINGITIDIS "**

Clasificación IPC: A 61 K 39/00.

Reivindicación(es): 1 a 4 **Folio(s):** 456

Titular(es): CHILDREN'S HOSPITAL & RESEARCH CENTER AT OAKLAND.

Domicilio(s): Oakland, California, Estados Unidos de América.

Inventor(es): Dan Granoff y Gregory R. Moe.

Prioridad N°: 60/221,495 **Fecha:** 27 de julio del 2000 **País:** US.

Solicitud Internacional N°: PCT/US 01/23842 **Fecha:** 27 de julio del 2001.

REPUBLICA DE COLOMBIA
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

RESOLUCION 48215

Por la cual se otorga una patente de invención

CERTIFICADO

Rad. PCT/ 03-4732

Vigente desde: 27 de julio del 2001 **Hasta:** 27 de julio del 2021

ARTICULO SEGUNDO: El titular tendrá los derechos y las obligaciones establecidos en la Decisión 486 de la Comisión de la Comunidad Andina y demás disposiciones legales vigentes sobre propiedad industrial, precisando que para mantener vigente la patente se deberá cancelar la tasa anual de mantenimiento conforme lo dispone el artículo 80 de la referida norma comunitaria.

ARTICULO TERCERO: Entregar al titular copia auténtica de esta resolución y el certificado de patente, previas las anotaciones en los libros de registro.

ARTICULO CUARTO: Notificar el contenido de la presente resolución a la doctora Margarita Castellanos Abondano, en su calidad de apoderada de Children's Hospital Research Center AT Oakland., o a quien haga sus veces, entregándole copia de la misma, advirtiéndole que contra ella procede el recurso de reposición ante el Superintendente de Industria y Comercio, del cual podrá hacer uso al momento de la notificación personal o dentro de los 5 días hábiles siguientes a ella.

NOTIFÍQUESE Y CUMPLASE

Dada en Bogotá, D.C., a los

25 SET. 2009

EL SUPERINTENDENTE DE INDUSTRIA Y COMERCIO (E),


GIANCARLO MARCENARO JIMENEZ

Doctora
MARGARITA CASTELLANOS ABONDANO
Calle 94 A N° 7 A – 09.
Bogotá D.C.



202021

Sede Centro: Carrera 13 No. 27-00 Pisos 2, 5, 7 y 10
Sede CAN: Tr. 40A No. 38-50 Conmutador: 5870000
Fax: 5870284. Línea 0180000-910165
Web: www.sic.gov.co e-mail: info@sic.gov.co
Bogotá D.C. - Colombia



PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 5 : A31K 39/095, C07K 13/00, 7/04 A61K 39/39, 39/385, C12N 15/31 C12N 15/62 // (C12N 15/31 C12R 1/36)	A2	(11) International Publication Number: WO 90/06696 (43) International Publication Date: 28 June 1990 (28.06.90)
(21) International Application Number: PCT/US89/05678 (22) International Filing Date: 19 December 1989 (19.12.89) (30) Priority data: 8803111 19 December 1988 (19.12.88) NL 8900030 6 January 1989 (06.01.89) NL 8901612 26 June 1989 (26.06.89) NL (71) Applicants (for all designated States except US): PRAXIS BIOLOGICS, INC. [US/US]; 30 Corporate Woods, Suite 300, Rochester, NY 14623-1493 (US). RIJKSINSTITUUT VOOR VOLKSGEZONDHEID EN MILIEUHYGINE [NL/NL]; Antonie van Leeuwenhoeklaan 9, P.O. Box 1, NL-3720 BA Bilthoven (NL). (72) Inventors; and (75) Inventors/Applicants (for US only) : SEID, Robert, C., Jr. [US/US]; 590 25th Avenue, San Francisco, CA 94121 (US). PARADISO, Peter, R. [US/US]; 6 Guilford Way, Pittsford, NY 14534 (US). POOLMAN, Jan, T. [NL/NL]; Leeteinde 8, NL-1151 AK Broek in Waterland (NL). HOOGERHOUT, Peter [NL/NL]; Idenburgstraat 13, NL-2805 SZ Gouda (NL). WIERTZ, Emmanuel, J., H., J. [NL/NL]; Mauritsstraat 106, NL-3583 HW Utrecht (NL). VAN DER LEY, Peter [NL/NL]; Adriaan van Ostadelaan 124, NL-3583 AM Utrecht (NL). HECKELS, John, Edward [GB/GB]; 6 Arun Way, West Wellow, Romsey, Hampshire SO51 6GT (GB). CLARKE, Ian, Nicholas [GB/GB]; 15 Fernyhurst Avenue, Rownhams, Southampton, Hampshire SO1 8DR (GB).		(74) Agents: DeCONTI, Giulio, A., Jr. et al.; Hamilton, Brook, Smith & Reynolds, Two Militia Drive, Lexington, MA 02173 (US). (81) Designated States: AT (European patent), AU, BE (European patent), CH (European patent), DE (European patent), DK, ES (European patent), FI, FR (European patent), GB (European patent), IT (European patent), JP, LU (European patent), NL (European patent), NO, SE (European patent), US. Published <i>Without international search report and to be republished upon receipt of that report.</i>
(54) Title: MENINGOCOCCAL CLASS 1 OUTER-MEMBRANE PROTEIN VACCINE (57) Abstract Outer-membrane vesicles, Class 1 outer membrane proteins of <i>Neisseria meningitidis</i> , fragments or oligopeptides containing epitopes of the Class 1 I OMP can be used to immunize against meningococcal disease.		

-1-

MENINGOCOCCAL CLASS 1 OUTER-MEMBRANE PROTEIN VACCINEDescriptionBackground of the Invention

Bacterial meningitis is an inflammatory disease of the central nervous system caused by the growth of bacteria in and adjacent to the leptomeninges. Meningitis is an acute infectious disease which affects children and young adults and is caused by the Neisseria meningitidis, amongst other agents including other bacterial and viral pathogens.

Meningococci are subdivided into serological groups depending on the presence of either capsular or cell wall antigens. Currently recognized serogroups include A, B, C, D, W-135, X, Y, Z, and 29E as segregated by seroagglutination. The polysaccharides responsible for the serogroup specificity of the group A, B, C, X, W-135 and Y have been purified.

The carrier rate for meningococci is much higher than the incidence of the disease. Some persons are temporary carriers, while others are chronic carriers, discharging meningococci either more or less continuously or in a sporadic fashion. The meningococcal carrier state is an immunizing process, and within two weeks of colonization, production of antibodies to meningococci can be identified. It appears that bactericidal antibodies are directed against both the capsular polysaccharide and other cell wall antigens.

-2-

Studies have shown that meningococcal outer membranes have three to five major proteins, with the predominant 41,000Mr or 38,000Mr proteins carrying the serotype specific determinants. There is a considerable degree of interstrain heterogeneity in the profiles of the outer membrane proteins on sodium dodecyl sulfate-polyacrylamide electrophoretic gels (SDS-PAGE). As defined by peptide mapping studies, the proteins comprise five classes, designated 1 through 5, based upon common peptide structures. Bactericidal monoclonal antibodies have been produced against the 46,000 Mr Class 1 proteins which are shared to some extent among strains of different serotypes. (Frasch, C.E. et al., (1985) pg. 633, "New Developments in Meningococcal Vaccines", in G.K. Schoolnik et al. (ed.) The Pathogenic Nisseriae, American Society for Microbiology, Washington, D.C.).

The capsular polysaccharide of groups A, C, W-135 and Y meningococci have been used to develop vaccines against the organism. Although these vaccines have been effective in the short term, they do not induce immunological memory and subjects must be revaccinated within approximately 3 years to maintain their resistance. The group B polysaccharide is poorly immunogenic and successful vaccines have not been produced. A possible explanation for the low activity may be due to tolerance to the group B polysaccharide induced by crossreactive

-3-

antigens found in human tissues such as the brain. Furthermore, studies show that most of the bactericidal antibodies in the convalescent sera of patients who have had group B meningococcal disease are directed against outer membrane proteins.

Vaccines for protecting against group B meningococcal disease have been developed in which non-covalent complexes of outer membrane proteins (OMP) and group B polysaccharide were administered. Beuvery, et al. (1983) Infect. Immun. 40:369-380. However, the B polysaccharide is known to induce a transient IgM antibody response, which does not confer immunoprotection. Furthermore, there is great antigenic diversity and variability in the meningococci outer membrane proteins from strain to strain. Additionally, lipopolysaccharides are present in the OMP and exhibit antigenic variability as well.

There is a need for safe and effective vaccines against meningococcal disease which provide immunity from infection, particularly in infants and the elderly.

Summary of the Invention

This invention pertains to isolated outer membrane vesicles (OMV's), to substantially purified Class 1 outer membrane protein (OMP) of Neisseria meningitidis, to fragments of the Class I OMP and to oligopeptides derived from the Class I OMP which contain continuous or discontinuous, immunogenic and

-4-

protective B cell epitopes reactive with bactericidal antibodies against N. meningitidis and to the use of isolated OMV's, the meningococcal Class I OMP, fragments or oligopeptides for vaccination against N. meningitidis.

The isolated OMV's, meningococcal Class I OMP, fragments or oligopeptides derived therefrom can be used in univalent or multivalent subunit vaccines alone, in mixtures, or as chemical conjugates or genetic fusions. In preferred vaccines, epitopes from different epidemiologically relevant meningococcal strains are used. In addition, isolated OMV's, the Class I OMP, fragments or oligopeptides can be used in conjunction (as mixtures, fusion or conjugates) with other antigens of N. meningitidis. For example, they can be used in conjunction with capsular polymers or oligomers (or fragments thereof) of N. meningitidis or with Class I outer membrane proteins (or epitopes thereof) of different subtypes. In addition, they can be used with antigens of other infectious bacteria, viruses, fungi or parasites. Class I OMP T cell epitopes also are defined and these can be used in conjunction with other vaccine components to enhance the protective immune response to the vaccines.

This invention also pertains to the methods of producing isolated OMV's, the Class I OMP, fragments and oligopeptides and to various vaccine formulations containing them. The isolated OMV's Class I OMP can be produced by mutant meningococcal strains which do not express the Class 2/3

-5-

outer membrane protein. Fragments can be produced by cyanogen bromide cleavage and subsequent purification. Isolated OMV's, the Class I OMP, fragments or oligopeptides can be produced by recombinant DNA techniques, chemical synthesis or chemical or enzymatic cleavage. These materials, in turn, can be conjugated or fused to carrier peptides or proteins, to other antigens of N. meningitidis or to antigens of other microorganisms by chemical or genetic coupling techniques to produce multivalent antigenic conjugates and fusion peptides or proteins. They can be modified for conjugation such as by the addition of amino acids or other coupling groups. For vaccination, isolated OMV's, the class I OMP, fragments or oligopeptides, in any of the forms described, can be formulated in pharmaceutically acceptable vehicles with optional additives such as adjuvants.

This invention also pertains to isolated nucleic acids which encode class I OMP, fragments or oligopeptides. The nucleic acids can be incorporated into appropriate expression systems for production of isolated OMV's, Class I OMP, fragments or any oligopeptides derived therefrom. These nucleic acids can be modified as genetic fusions to contain sequences encoding additional polypeptides useful in enhancing the immune response to the vaccine formulation containing the expressed fusion polypeptides. In addition, Class I OMP of N. meningitidis is homologous in amino acid sequence and structure to porin proteins of other gram negative pathogens and

-94-

CLAIMS

1. Vaccine effective against meningococcal disease, comprising an effective amount of an outer-membrane vesicle isolated from expressing homologous and/or heterologous or at least one meningococcal class I outer-membrane protein or a fragment or oligopeptide containing an epitope thereof.
2. A vaccine of Claim 1, wherein the meningococcal Class I outer-membrane protein originates from a mutant meningococcal strain which is negative for Class 2/3 outer membrane protein.
3. A vaccine of Claim 1, wherein the Class I outer-membrane protein, fragment or oligopeptide is produced by a microorganism containing a heterologous gene encoding the Class I outer-membrane protein, fragment or oligopeptide.
4. A vaccine of Claim 1, wherein the Class I outer-membrane protein, fragment or oligopeptide is derived from a group A,B,C,W-135 or Y meningococcus.
5. A vaccine of Claims 1, wherein the Class I outer-membrane protein, fragment or

-95-

oligopeptide is derived from a group B meningococcus.

6. A vaccine of Claim 1, comprising 5-10 various group B meningococci class I outer-membrane proteins, fragments or oligopeptides.
7. A vaccine of Claim 1, wherein the protein fragment is obtained by cyanogen bromide treatment of a Class I outer-membrane protein.
8. A vaccine of Claim 1, wherein the fragment of class I meningococcal outer-membrane protein is obtained by proteolysis with an enzyme selected from the group consisting of endoLys-C, endo-Arg-C, endoGlu-C and Staphylococcus V8-protease.
9. A vaccine of Claim 1, wherein the oligopeptide comprises at least one bactericidal antibody binding epitope of meningococcal class I outer-membrane proteins.
10. A vaccine of Claim 1, wherein the oligopeptide comprises at least an amino acid sequence selected from the group consisting of QPQVTNGVQGN, PPSKSQP, QAANGGASG, YYTKDTNNNLTL, YYTKNTNNNLTL, YYTKDTNNNL, YYTKNTNNNL, HFVQQTPQSQP and HYTRQNNTDVF.

-96-

11. A vaccine of Claims 1, wherein the epitope is located in surface loops of meningococcal class I outer-membrane proteins in the area of amino acids 24-34 and 176-187.
12. A vaccine of Claim 1, wherein the Class I outer-membrane protein, fragment or oligopeptide is conjugated to a T cell epitope via chemical coupling.
13. A vaccine of Claim 1, wherein the Class I outer-membrane protein, fragment or oligopeptide contains a meningococcal A,B,C,W-135 and/or Y polysaccharide in conjugate form with the protein product.
14. A vaccine of Claim 1, further comprising the a Zwitterionogenic, cationogenic, anionogenic and/or non-ionogenic detergent.
15. A vaccine of Claim 14, wherein the detergent is selected from the group consisting of Zwittergent Zw 3-10, Zwittergent Zw 3-14, Tween-20, sodium cholate, octyl glucoside and sodium deoxycholate.
16. A vaccine of Claim 1, further comprising the an adsorbent selected from group consisting of aluminium phosphate, aluminium hydroxide and calcium phosphate.

-97-

17. A vaccine of Claim 1, further comprising an immuno-stimulating complex (ISCOM).
18. A vaccine of Claim 1, wherein the Class I outer membrane protein, fragment or oligopeptide is contained within a liposome.
19. A vaccine of Claims 1, the Class I outer membrane protein, fragment or oligopeptide is coupled to a lipid.
20. Substantially purified fragment of class 1 outer membrane protein of Neisseria meningitidis, the fragment having a molecular weight of about 25 kD or less and containing continuous or discontinuous epitopes reactive with bactericidal antibodies against N. meningitidis.
21. A fragment of Claim 20, wherein the class 1 outer membrane protein is of the subtype Pl.7.16.
22. A fragment of Claim 21, produced by cyanogen bromide cleavage of a class 1 outer membrane protein of N. meningitidis, the fragment having a molecular weight of approximately 25 kD.
23. Oligopeptide containing a B cell epitope of a

-98-

Class I outer-membrane protein which varies in amino acid sequence among different meningococcal porin proteins.

24. Oligopeptide of Claim 23, containing at least one of the amino acid sequences selected from the group consisting of QPQVTNGVQGN, PPSKSQP, QAANGGASG, YYTKDTNNNLTL, YYTKNTNNNLTL, YYTKDTNNNL, YYTKNTNNNL, HFVQQTPQSQP and/or HYTRQNNTDVF.
25. Oligopeptide containing an epitope of a Class I outer-membrane protein which is conserved in amino acid sequence among different meningococcal porin proteins.
26. Oligopeptide containing a T cell epitope of a meningococcal Class I outer-membrane protein.
27. Isolated nucleic acid encoding meningococcal class I outer-membrane protein or a fragment or oligonucleotide containing an epitope thereof.
28. A method of eliciting a protective immune response against Neisseria meningitidis, comprising administering a vaccine composition, comprising one or more meningococcal Class I outer membrane proteins or fragments thereof and, optionally, an adjuvant in a pharmaceutically acceptable vehicle.

-99-

29. A method of Claim 28, wherein the fragment is conjugated or genetically fused to a T cell epitope, B cell epitope or carrier peptide or protein.
30. A method of Claim 29, wherein the conjugation is through a cysteine or lysine residue coupled to a terminus of the fragment.
31. A method of Claim 29, wherein the carrier is a bacterial toxin, CRM or toxoid.
32. A method of Claim 28, wherein the class 1 outer membrane protein is of subtype Pl.7,16.
33. A method of eliciting a protective immune response against Neisseria meningitidis, comprising administering a vaccine composition, comprising at least one oligopeptide containing a continuous or discontinuous epitope of a class I outer membrane protein reactive with bactericidal antibodies against N. meningitidis and, optionally, an adjuvant in a pharmaceutically acceptable vehicle.
34. A method of Claim 33, wherein the oligopeptide contains an amino acid sequence selected from the group consisting of QPQVTNGVQGN, PPSKSQP, QAANGGASG, YYTKDTNNNLTL, YYTKNTNNNLTL, YYTKDTNNNL, YYTKNTNNNL, HFVQQTPQSQP and/or HYTRQNNTDVF.

-100-

35. A method of Claim 33, wherein the proteolytic fragment is conjugated or genetically fused to a T cell epitope, B cell epitope or carrier peptide or protein.
36. A method of Claim 33, wherein the conjugation is through a cysteine or lysine residue coupled to a terminus of the fragment.
37. A method of Claim 35, wherein the carrier is a bacterial toxin, CRM or toxoid.
38. An antigenic conjugate, comprising a meningococcal class I outer-membrane protein, a fragment or oligopeptide containing a epitope thereof conjugated to a carrier protein or epitope thereof.
39. An antigenic conjugate of Claim 8, wherein the oligopeptide selected from the group consisting of QPQVTNGVQGN, PPSKSQP, QAANGGASG, YYTKDTNNNLTL, YYTKNTNNNLTL, YYTKDTNNNL, YYTKNTNNNL, HFVQQTPQSQP and/or HYTRQNNTDVF.
40. An antigenic conjugate of Claim 39, wherein the antigen carrier protein is a bacterial toxin, CRM or epitope thereof.
41. An antigenic conjugate of Claim 40, wherein the carrier protein is CRM₁₉₇.

Superintendencia de Industria y Comercio

Otorga la Patente de Invención a:

*Children's Hospital & Research Center AT Oakland
Oakland, California, Estados Unidos de America*

A la Creación denominada:

"Vacunas para protección de espectro amplio contra enfermedades causadas por neisseria meningitidis"

Inventor(es):

*Dan Granoff
Gregory B. Nee*

Certificado No. 690

Solicitud Internacional No. US2001/23842

*Clasificación Internacional: A61K 39/0
de Patentes*

4 Reivindicaciones

Vigente Desde: 27/07/2001

Hasta: 27/07/2021

Prioridad No. US 60/221.495 27/07/2000

Que la solicitud de Patente de Invención No. 3 4732 cumple con los requisitos previstos en las disposiciones legales vigentes, Resolución No. 48215 de 25/09/2009, en testimonio de ello se estampa la firma del funcionario competente y el sello de esta Entidad.

Superintendente de Industria y Comercio