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Derecho Comercial – Derecho Administrativo
ABOGADOS ESPECIALISTAS

37

Señor Jefe
División de Nuevas Creaciones
Superintendencia de Industria y Comercio
E. S.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
No. 10-052376- -00001-0000

Fecha: 2010-05-21 16:12:06 Dep. 2020 DIR.NUEVASCR
Tra. 2 PATENTES Eve: 1 REGDEPOSITO
Act 329 CTOINFORMACION Folios: 16

Expediente : No. PCT 10-052376
Referencia : Solicitud de registro la PCT denominada
**METODO PARA FABRICAR FILTROS DE GRAVILLA
EN POZOS PETROLEROS**
Solicitante : **MECOL OIL TOOLS CORP.**

COMPLEMENTO DE INFORMACIÓN

CAROLINA VERA MATIZ, obrando como apoderada de la sociedad MECOL OIL TOOLS CORP, solicitante de la patente de invención PTC (fase I) en referencia, atentamente me permito aclarar que por error involuntario la patente se radicado como patente de invención bajo la decisión 486, siendo correcto la entrada a fase nacional como PCT (fase I), en tiempo oportuno para ello.

Por lo anterior solicito que se corrija de acuerdo a como debe ser "Solicitud de registro la PCT FASE NACIONAL I denominada **METODO PARA FABRICAR FILTROS DE GRAVILLA EN POZOS PETROLEROS**", estoy adjuntando nuevo petitorio en el cual se evidencia que la patente de invención es fase nacional PCT.

De igual manera adjuntamos copia simple de la radicación PCT de fecha 10 de marzo de 2010 bajo No. PCT/US 09/06697 de fecha 23 de diciembre de 2009, con fecha de prioridad del 23 de julio de 2009.

Cabe anotar que esta solicitud se hace dentro del tiempo de la prioridad allegada como PCT, por ello ruego tener en cuenta esta información en el momento de publicar la patente en la Gaceta de la propiedad Industrial.

CAROLINA VERA MATIZ
C.C. No. 52.225.999
T.P. No. 91835



Propiedad Industrial – Derechos de Autor
Derecho Comercial – Derecho Administrativo
ABOGADOS ESPECIALISTAS

Señor Jefe
División de Nuevas Creaciones
Superintendencia de Industria y Comercio
E. S. E

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO



No. 10-052376-00001-0000

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Cabe anotar que esta solicitud se hace dentro del tiempo de la prioridad allegada como PCT, por ello ruego tener en cuenta esta información en el momento de publicar la patente en la Gaceta de la propiedad Industrial.

CAROLINA VERA MATIZ

C.C. No. 52.225.999

T.P. No. 91835

PETITORIO

Industria y Comercio
SUPERINTENDENCIA

FORMULARIO UNICO DE SOLICITUD DE PATENTE PCT ENTRADA EN FASE NACIONAL

①

SOLICITUD DE:



Patente de Invención.



Patente de Modelo de Utilidad



Capítulo I.



Capítulo II

②

SOLICITANTE
(71)

Nombre: MECOL OIL TOOLS CORP.

Dirección: 1800 NW 24 Avenue, Apt. 514

Teléfono:

Fax:

E-Mail:

Domicilio: MIAMI (FLORIDA) ESTADOS UNIDOS

IDENTIFICACION

C.C.



NIT



C.E.



Otro



Número:

③

REPRESENTANTE
O APODERADO
(74)

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Teléfono: 3127936

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E-Mail: cvera@veraabogadossa.com

Domicilio: Bogotá D.C. Colombia

IDENTIFICACION

C.C.



NIT



C.E.



Otro



Número:

52.225.999

T.P. 91835 del C.S.

④

INVENTOR(ES)
(72)

Nombre: ALEJANDRO PIETROBELLI y FAUSTO PIETROBELLI

Dirección:

Domicilio: MIAMI FLORIDA - U.S.A.

⑤

PCT (86)

Solicitud Internacional No.

Fecha

//

Publicación Internacional No.

Fecha

//

⑥

Título (54): METODO PARA FABRICAR FILTROS DE GRAVILLA EN POZOS
PETROLEROS

⑦

Clasificación Internacional (51):

⑧

Prioridad

SI



NO



(33) País de Origen

ESTADOS UNIDOS

(32) Fecha

23/07/2009

(31) N° de Solicitud

PCT/US 09/06697

⑨

Comprobante de Pago N°:

Fecha

©

ANEXOS

- ☒ 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 del 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:

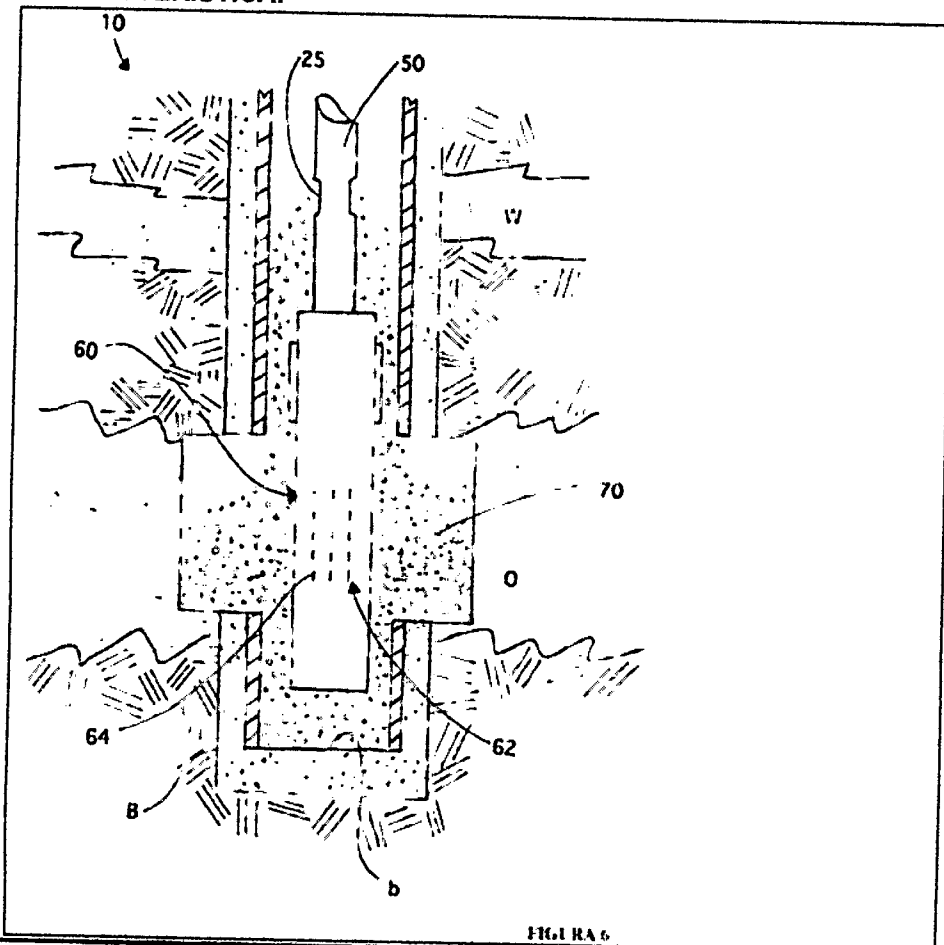


FIGURA 6

12) Solicito la consecución de la patente,

NOMBRE: CAROLINA VERA MATIZ

FIRMA: _____

C.C.: 52.225.990 T.P. 91835 del

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
JESUS SANCHELIMA
235 S.W. LE JEUNE ROAD
MIAMI, FL 33134

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Applicant's or agent's file reference 290362	Date of mailing <i>(day/month/year)</i> 10 MAR 2010
International application No. PCT/US 09/06697	International filing date <i>(day/month/year)</i> 23 December 2009 (23.12.2009)
Applicant MECOL OIL TOOLS CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are 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 two months from the date of transmittal of the international search report.
 Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
 1211 Geneva 20, Switzerland, Facsimile No.: +41 22 338 8270
 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 and the written opinion of the International Searching Authority are 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. Reminders

Shortly after the expiration of 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.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, 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); otherwise, the applicant must, within 20 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 290362	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/US 09/06697	International filing date (day/month/year) 23 December 2009 (23.12.2009)	(Earliest) Priority Date (day/month/year) 23 July 2009 (23.07.2009)
Applicant MECOL OIL TOOLS CORPORATION		

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 2 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.
☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

b. ☐ This international search report has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43.6b/s(a)).

c. ☐ With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (see Box No. II).

3. ☐ Unity of invention is lacking (see Box No. III).

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, by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 1
- ☒ as suggested by the applicant.
☐ as selected by this Authority, because the applicant failed to suggest a figure.
☐ as selected by this Authority, because this figure better characterizes the invention.
- b. ☐ none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 09/06897

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - E21B 43/04 (2010.01)

USPC - 166/278

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(8): E21B 43/04 (2010.01)

USPC: 166/278

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8): E21B 43/04 (2010.01) - see search terms below
USPC: 166/51, 242.1, 244.1, 250.1, 278, 297 - see search terms below

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST(USPT,PGPB,EPAB,JPAB); GooglePatents; GoogleScholar
Search Terms: Wellbore, formation, gravel, pack, filter, section, mill, underreammer, casing, cut, perforate, penetrate, through, screen, liner, seal, packer, enlarge, expand, bore, diameter, radius

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,255,741 A (ALEXANDER) 26 October 1993 (26.10.1993), entire document especially Fig 1-3, col 2, ln 53-59, col 3, ln 4-10, col 5, ln 11-12, col 5, ln 57-61, col 6, ln 11-16	1-3
Y	US 5,174,379 A (WHITELEY et al.) 29 December 1992 (29.12.1992), Fig 1B, col 3, ln 24-26	1-3
Y	US 5,145,004 A (CORNETTE) 08 September 1992 (08.09.1992), Fig 1-5, col 3, ln 58-62	1-3
Y	US 6,920,923 B1 (PIETROBELLI et al.) 26 July 2005 (26.07.2005), abstract, Fig 1-8	2-3

☐ Further documents are listed in the continuation of Box C.

* 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 application or patent but published on or after the international filing date

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

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

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

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

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

"&" document member of the same patent family

Date of the actual completion of the international search

09 February 2010 (09.02.2010)

Date of mailing of the international search report

10 MAR 2010

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To: JESUS SANCHELIMA
235 S.W. LE JEUNE ROAD
MIAMI, FL 33134

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

10 MAR 2010

Applicant's or agent's file reference
290362

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/US 09/06697

International filing date (day/month/year)

23 December 2009 (23.12.2009)

Priority date (day/month/year)

23 July 2009 (23.07.2009)

International Patent Classification (IPC) or both national classification and IPC
IPC(8) - E21B 43/04 (2010.01)
USPC - 168/278

Applicant **MECOL OIL TOOLS CORPORATION**

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450, Alexandria, Virginia 22313-1450
Facsimile No. 571-273-3201

Date of completion of this opinion

09 February 2010 (09.02.2010)

Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300
PCT OSP: 571-272-7774

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/US 09/06897

Box No. 1 Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of:
☒ the international application in the language in which it was filed.
☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).
2. ☐ This opinion has been established taking into account the rectification of an obvious mistake authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a)).
3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, this opinion has been established on the basis of a sequence listing filed or furnished:
 - a. (means)
☐ on paper
☐ in electronic form
 - b. (time)
☐ in the international application as filed
☐ together with the international application in electronic form
☐ subsequently to this Authority for the purposes of search
4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/US 09/06697

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-3	YES
	Claims	None	NO
Inventive step (IS)	Claims	None	YES
	Claims	1-3	NO
Industrial applicability (IA)	Claims	1-3	YES
	Claims	None	NO

2. Citations and explanations:

Claim 1 lacks an inventive step under PCT Article 33(3) as being obvious over US 5,255,741 A (Alexander), in view of US 5,174,379 A to Whiteley et al. (hereinafter Whiteley), further, in view of US 5,145,004 A (Comette).

Regarding claim 1, Alexander teaches a method for making gravel filters in oil wells having a casing (Fig 2A-C, item 38 -- surface casing 38) coaxially mounted within a well bore (Fig 2A-C -- well bore (unlabeled)) comprising the steps of:

A) ascertaining the location, at the cemented casing in an oil well bore, adjacent to a producing formation where a gravel filter is to be built (col 2, ln 53-59, Fig 2A-C -- The process includes the steps of: drilling a bore hole to a first predetermined depth above the hydrocarbonaceous fluid producing zone; installing a well casing in the bore hole to about the first predetermined depth; lowering on a pipe string through the bore hole an apparatus for drilling and installing a slotted liner to be gravel packed);

B) cutting adjacent to said producing formation (col 3, ln 4-10, Fig 2A-C -- enlarging the pilot hole to a diameter larger than the internal diameter of the well casing and sufficient for gravel packing; continuing until the first end of the slotted liner reaches a second pre-determined depth, the second pre-determined depth sufficient to place the slotted liner within the hydrocarbonaceous fluid producing zone);

C) enlarging said bore's diameter where said portion was cut to create an enlarged annular space by removing beyond the bore's initial diameter (col 4, ln 37-40, Fig 1-2A-C, item 20 -- When in the expanded position, roller-cone underreaming bits 20 are employed to enlarge a pilot hole to a diameter sufficient for gravel packing)

D) lowering and installing a producing tube having a distal end with an intake screen (Fig 1-2A-C, item 24 -- slotted production liner 24) and positioning said intake screen substantially adjacent to said portion which was removed (Fig 2A-C, item 24 -- slotted production liner 24 adjacent the enlarged area);

E) depositing an effective amount of gravel in said enlarged annular space (col 5, ln 57-61, Fig 2C, item G -- FIG. 2C depicts apparatus 10, in partial cut-away, during gravel packing. Gravel-laden foam G is fed over the top and down through the annulus formed between apparatus 10 and casing 38, into underreamed annulus 42); and

Alexander does not explicitly teach cutting a portion of a casing. However, Whiteley, which is also drawn to a method for making gravel filters in oil wells, teaches:

B) cutting a portion of said casing adjacent to said producing formation (col 3, ln 24-26, Fig 1B, item 18 -- Perforating/gravel pack apparatus 10 is shown disposed in wellbore 12 at a depth which positions perforating gun 18 adjacent a zone of interest 20). It would have been obvious to one of ordinary skill in the art to modify the method of Alexander so as to include the step of cutting the casing as taught by Whiteley because cutting through a portion of casing would allow multiple gravel packs to be installed along a single wellbore casing.

---Please See Continuation Sheet---

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US 09/06697

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.
Continuation of:

Box V.2. Citations and explanations:

Neither Alexander nor Whiteley explicitly teach the steps of installing said intake screen coaxially disposed within a casing and sealing the casing from above. However, Comette, which is also drawn to a method for making gravel filters in oil wells, teaches:

D) said producing tube having said intake screen and being coaxially disposed within said casing (col 4, in 23-37, Fig 1-5, item 21 within casing 13 -- First auger-liner assembly 20 is comprised of a first fluid-permeable liner 21 having an auger blade 22 welded or otherwise secured to and extending along the outer periphery thereof. "Fluid-permeable liner", as used herein, is meant to be generic and to include any and all types of liners (e.g. screens, slotted pipes, screened pipes, perforated liners, pre-packed screens and/or liners, combinations of same, etc.) which are used or could be used in well completions of this general type. As will be recognized by those skilled in the art, there are presently several known suppliers from whom such "liners" are readily commercially available. The liner may be of a continuous length, as shown, or it may be comprised of a plurality of segments connected by subs or "blanks"; and

F) sealing a space between said bore and said casing at a predetermined distance above (Fig 1-5, items 26, 38 -- packers 26, 38 seal the space between wellbore 11 and casing 13 from a position above the casing perforations 12a, 13a).

It would have been obvious to one of ordinary skill in the art to combine the steps of installing the intake screen coaxially disposed within a casing and sealing the casing of Comette with the method of Alexander and the step of cutting the casing of Whiteley because installing an intake screen within a casing would allow for the suction of formation fluids that permeate into the casing. Further, sealing the casing from above would allow the gravel trap to be contained thereby allowing the installation of multiple gravel packs along a single wellbore casing, as suggested by Comette.

Neither Alexander, Whiteley, nor Comette explicitly teach defining a space between said bore and said casing that is cemented to keep said casing in place. However, Comette does teach a space between said bore and casing (Fig 1) and Alexander does teach cementing the casing to the formation (col 5, in 11-12, Fig 2A-C, item 38 -- Surface casing 38 is shown set to the top of formation UF and cemented in place, as is customary). As a cement region is already customary, it would have been obvious to one of ordinary skill in the art to specify a defined cemented space between the casing and the bore to ensure the casing is securely held in place.

Claims 2 and 3 lack an inventive step under PCT Article 33(3) as being obvious over Alexander, Whiteley, Comette, and in further view of US 6,920,923 B1 to Pietrobelli et al. (hereinafter 'Pietrobelli').

Regarding claim 2, Alexander in view of Whiteley and Comette discloses the apparatus of claim 1. Alexander further teaches the steps of cutting and enlarging said bore's diameter being performed with an underreamer (col 5, in 13-14, Fig 2A-D, item 20 -- Apparatus 10 is shown with underreamer roller cone bits 20; col 6, in 11-16, Fig 3, item 320 -- FIG. 3 presents an alternate means for enlarging a pilot hole for use in an apparatus for drilling and installing a gravel-packed liner 10, in accordance with the present invention. As shown, the means for enlarging a pilot hole employs a pair of underreaming drag blades 320). Whiteley further teaches cutting said casing (Fig 1B-C, item 18 -- perforating gun 18 perforates casing 14). Neither references explicitly teaches said method also performed with a section mill. However, Comette does teach a fish blade mill (col 5, in 26-29). Pietrobelli teaches a section mill (abstract, Fig 1-8). It would have been obvious to one of ordinary skill in the art to combine the section mill and cutting method of Pietrobelli with that of Alexander, in view of Whiteley and Comette, thus providing a faster and more efficient method of cutting said casing and bore.

Regarding claim 3, Alexander in view of Whiteley, Comette, and Pietrobelli discloses the apparatus of claim 2. Comette further teaches the gravel being selected for predetermined diameters in accordance with the characteristics of said producing formation (col 3, in 58-66, Fig 1-5, item 14 -- "Gravel" 14 as used herein is intended to include all particulate and/or aggregate materials (e.g. gravel, sand, combinations, etc.) which are used or can be used in gravel pack or fracture completions. As known in the art, the "gravel" particles used in a particular situation are sized so as to block or filter out the particulates which may be produced with the well fluids or which are used to prop open a hydraulically-induced fractures in the formation).

Claims 1-3 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used in industry.

I. TITLE: *METHOD FOR MAKING GRAVEL FILTERS IN OIL WELLS*

II. TECHNICAL FIELD

1. Field of the Invention.

[001] The present invention relates to a method for making gravel filters in oil well bores, particularly in those oil well bores where there are water veins near oil producing formations.

III. BACKGROUND ART

2. Other Related Applications.

[002] Some producing formations tapped by oil well installations have sandy characteristics that require the creation of gravel filters adjacent to the producing formation. The present methods typically gun the casing to make holes that connect the producing tube with a gravel filter that is defined by the inner surface of the well bore and the outer surface of the casing. This results in a very limited and thin gravel filter that is susceptible to getting clogged thereby frequently interrupting the operation of the well. The method is also not very precise.

[003] Several methods for making gravel filters in oil well bores have been used in the past. None of them, however, have the flexibility and precision, nor the effectiveness (from its larger size), of the present method. Additionally, this method can be used in new and old oil wells, including those where the gun

method was used. The precision characteristics of the present method are quite desirable in oil wells with water veins in relative proximity to the oil producing formation.

[004] Applicants believe that one of the related references corresponds to U.S. patent No. 2,371,385 issued to Eckel in 1942 for a gravel packed liner and perforation assembly. Eckel's patent discloses the use of a gun perforator **21** that is suspended by a cable **24** within a liner or casing **11**. The latter includes an envelope carrying the granular material or gravel **17**. The difficulties with the uncertain path of the bullets passing through granular material **17** are documented by the patentee. Page 2, Col. 3, lines 25-32. Another problem with present gunned oil well casings is that the gravel material needs to be selected so that it is smaller than the unpredictable perforations. In sum, there is little control or precision to anticipate the resulting openings with gun operated procedures.

[005] Other patents describing the closest subject matter provide for a number of more or less complicated features that fail to solve the problem in an efficient and economical way. None of these patents suggest the novel features of the present invention.

V. BRIEF DESCRIPTION OF THE DRAWINGS

[006] With the above and other related objects in view, the invention consists in the details of construction and combination of parts as will be more fully understood from the following description, when read in conjunction with the accompanying drawings in which:

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Figure 1 represents an elevational cross-sectional view of an oil well bore **B** with a new (unused) casing **20** and a cemented bottom. A producing formation and a water vein above it are also represented to show typical characteristics in an oil well.

Figure 2 shows an elevational representation similar to the one shown in the previous figure with a section mill tool positioned to start cutting through the casing.

Figure 3 illustrates another elevational view similar to the previous figures with the blades cutting through the casing.

Figure 4 is a representation of an elevational view of the well's bore with the tool section milling the casing.

Figure 5 shows a cross-sectional view of the well's bore except for the underreamer tool for which the cross-section is not shown. The underreamer is shown enlarging the bore in a predetermined location.

Figure 6 shows an elevational view of the well's bore with a tool forming a gravel-packed filter between the enlarged portion of the bore and the casing.

Figure 7 represents another elevational view of the well's bore shown in the previous figures with a producing tube in place that includes a screen through which the filtered sand with oil is passed.

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Figure 8 shows an elevational view of a conventional oil well as it exists in the prior art.

VI. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[007] Referring now to the drawings, where the relevant portion of an oil well installation is generally referred to with numeral **10**, it can be observed that it basically includes casing **20** that extends coaxially inside bore **B** that includes a cemented bottom **b**, as it is typically found in new oil well installations. Bore **B** typically passes through water formations **W** and oil producing formations **O**. The space **S** between casing **20** and bore **B** is typically cemented to keep casing **20** in place. The lowermost end **22** of casing **20** is typically brought against bottom **b**. Several tools are then inserted in casing **20** and lowered to the required locations and finally the producing casing is installed.

[008] In old oil well installations, a filter has been previously made with a gun perforator that caused holes **23** to be made through casing **20** at predetermined locations, as shown in figure 8. The explosives used penetrate through cemented space **S**. The present invention can also be used to repair these conventional operating oil well installations.

[009] The first step in the present method is to ascertain the location where the window for the filter is to be made or where the repair is to take place. Once this is determined, a section milling tool is lowered to that location and casing **20** is cut, creating an interruption. The cutting takes place with precision that is not possible with the gunning method. In this manner, a user can avoid water formations **W**.

Casing **20** is kept in place since the annular space between casing **20** and the surface of bore **B** has been cemented, as it is conventionally done in the industry. A section milling tool, like the one described in U.S. patent No. 6,920,923, can be used to perform this function. A section milling tool is used to cut casing **20** and concentrates its blades' action on this operation.

[010] The next step, after withdrawing the section milling tool **30**, is the lowering of the underreamer **40** to the location where the window was formed. An underreamer, like the one described in Applicant's U.S. patent No. 5,896,940, can be used for this step. The underreamer enlarges the diameter of the bore at a location adjacent to where the window **25** was formed as it can be seen in figure 5.

[011] After retrieving underreamer **40**, a setting tool **50** is lowered and a mix of gravel and a fluid is pumped radially through window **25**, as seen in figure 6. The fluid can be water or other suitable liquid conventionally used to carry granular material, such as gravel, in oil well installations. Once a sufficient amount of the gravel mix **70** is pumped in the enlarged portion of the well, setting tool **50** is retrieved and producing tube **60** is installed. The result is a considerably larger volume of gravel filter **80** with an extended life, as best seen in figure 7.

[012] Producing tube **60** includes a screen **62** with through holes **64** cooperatively smaller than the diameter of the granular material constituting the annular filter to prevent this material from entering producing tube **60**. Different types of producing tubes **60** are conventionally used.

[013] One of the advantages of the present method for creating a gravel filter is its precision. A user can control the dimensions of the window or windows to be

built in casing 20. The size of the gravel used can also be controlled thereby knowing what the characteristics of the filter will be. The present methods for building gravel filters at present involve gunning a portion of casing 20 with unpredictable locations and dimensions for the holes.

[014] The foregoing description conveys the best understanding of the objectives and advantages of the present invention. Different embodiments may be made of the inventive concept of this invention. It is to be understood that all matter disclosed herein is to be interpreted merely as illustrative, and not in a limiting sense.

VII. INDUSTRIAL APPLICABILITY

[015] It is apparent from the previous paragraphs that an improvement of the type for such a method for making gravel filters in oil wells is quite desirable for making oil well filters with precision and less likely to become clogged over a predetermined period of time.

VIII. CLAIMS

What is claimed is:

1. A method for making gravel filters in oil wells having a casing coaxially mounted within a well bore and defining a space between said bore and said casing that is cemented to keep said casing in place, comprising the steps of:

- A) ascertaining the location, at the cemented casing in an oil well bore, adjacent to a producing formation where a gravel filter is to be built;
- B) cutting a portion of said casing adjacent to said producing formation;
- C) enlarging said bore's diameter where said portion was cut to create an enlarged annular space by removing the cemented space adjacent to said portion and beyond the bore's initial diameter;
- D) lowering and installing a producing tube having a distal end with an intake screen and being coaxially disposed within said casing and positioning said intake screen substantially adjacent to said casing portion which was removed;

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E) depositing an effective amount of gravel in said enlarged annular space; and

F) sealing said space between said bore and said casing at a predetermined distance above said portion.

2. The method set forth in claim 1 wherein the steps of cutting said casing and enlarging said bore's diameter is performed with a section mill and an underreamer.

3. The method set forth in claim 2 wherein the gravel is selected for predetermined diameters in accordance with the characteristics of said producing formation.

ABSTRACT OF THE DISCLOSURE

A method for making gravel filters in oil well bores by ascertaining the location of a producing formation adjacent to a cemented casing in a well bore, cutting a portion of the casing adjacent to the producing formation, enlarging the bore adjacent to the producing formation and depositing a sufficient amount of gravel in the enlarged portion of the bore to create an effective filter for a producing tube with a screen at its distal end positioned adjacent to the cemented bottom of the well bore.

Industria y Comercio
SUPERINTENDENCIA

7 JUN. 2010

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES
EXTRACTO PARA PUBLICACIÓN
SOLICITUD DE PATENTE DE INVENCION

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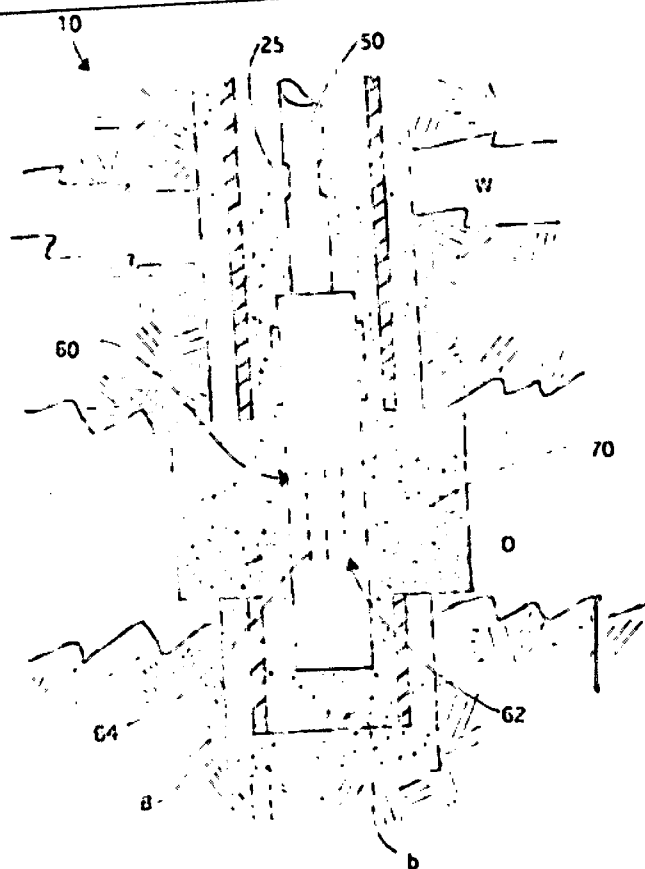
(72) Inventor(es) ALEJANDRO PIETROBELLI y
FAUSTO PIETROBELLI

(74) Agente: CAROLINA VERA MATIZ

(54) Título: METODO PARA FABRICAR FILTROS DE GRAVILLA EN POZOS PETROLEROS

Reivindicación(es):

1. Un método para fabricar filtros de gravilla en pozos petroleros que comprenden una carcasa montada coaxialmente dentro de la perforación, y que define un espacio entre la perforación y la carcasa el cual es cementado para fijar a la carcasa en su sitio, que comprende las etapas de:
 - a. Determinar el punto o lugar en la carcasa cementada dentro de la perforación, adyacente a una formación de producción donde se va a conformar el filtro;
 - b. Cortar una porción de dicha carcasa adyacente a la formación;
 - c. Dilatar dicha perforación en su diámetro con base en un corte para crear un espacio anular dilatado por remoción del espacio adyacente cementado de dicha porción, más allá del diámetro original de la perforación.
 - d. Bajar e instalar una tubería cuyo extremo distal lleva una criba o tamiz, coaxial con la carcasa donde dicha criba se coloca sustancialmente adyacente a la porción de la carcasa que ha sido removida.
 - e. Depositar una cantidad efectiva de gravilla en dicho espacio anular ensanchado, y
 - f. Sellar dicho espacio entre la perforación y la carcasa en una distancia predeterminada sobre dicha porción.
2. Método conforme a la Reivindicación 1. donde los pasos de cortar dicha carcasa y dilatar dicho diámetro de la perforación se ejecutan con herramienta fresadora y escariadora.



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**SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES**

2020

Bogotá, D.C.

Doctor

Emilio Ferrero
Apoderado

Oficio No.

REFERENCIA: Radicación No. 00-87793

**Evento 001
Actuación 430
Trámite 037
Folios**

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. DOCUMENTOS ESTUDIADOS.

- Capítulo descriptivo: folios 2 al 32
- Capítulo reivindicatorio: folios 33 al 44

2. OBJETO DE LA INVENCION.

Título: "Herbicidas a base de carbamoiltriaolinonas"

La invención se refiere a :

- Agente que contiene compuestos activos de una combinación de productos activos que comprende productos activos del grupo 1 , grupo 2 y grupo 3 cada uno de los grupos se encuentra definido en las reivindicaciones 1 a 9.
- Empleo del agente para la lucha contra las plantas indeseables.
- Procedimiento para la fabricación de una gente herbicida caracterizado porque se mezclan los productos activos con entendedores usuales y/o agentes tensoactivos.

Clasificación Internacional de Patentes: A01N47/38

3. CLARIDAD DE LA SOLICITUD.

De acuerdo a la Decisión 486 de la Comisión de la Comunidad Andina en su Artículo 30.- *"Las reivindicaciones definirán la materia que se desea proteger mediante la patente. Deben ser claras y concisas y estar enteramente sustentadas por la descripción"*; se hacen las siguientes observaciones al capítulo reivindicatorio:

En la reivindicación 1 se presenta una carbamoiltriaolinona de la fórmula general (I) en la cual se tienen los radicales R1,R2,R3; los cuales pueden tener significados tales como: alquilo, alquenilo, alquinilo, alcoxi, arilo, cicloalquilo, entre otros.

RESUMEN

Un método para conformar o fabricar filtros de gravilla en pozos petroleros determinando el sitio o punto de cementación de la formación de producción, cortando una porción de carcasa adyacente a la formación, dilatando la perforación adyacente a la formación y depositando una cantidad suficiente de gravilla en la porción dilatada, para crear un filtro efectivo sobre una tubería que lleva una criba en su extremo distal, posicionado adyacentemente en el fondo cementado de la perforación.