

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 17/22590

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - E21B 33/038 (2017.01)

CPC - E21B 33/0385

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)

See Search History Document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

See Search History Document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

See Search History Document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2014/185958 A1 (QUICK CONNECTORS, INC.) 20 November 2014 (20.11.2014) entire document	1
A	US 2014/0110164 A1 (EMERSON et al) 24 April 2014 (24.04.2014) entire document	1
A	US 2011/0017510 A1 (EMERSON) 27 January 2011 (27.01.2011) entire document	1
A	US 2008/0185155 A1 (EMERSON) 07 August 2008 (07.08.2008) entire document	1
A	US 3,945,700 A (DIDIER) 23 March 1976 (23.03.1976) entire document	1

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

05 May 2017

Date of mailing of the international search report

25 JUL 2017

Name and mailing address of the ISA/US

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Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

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

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
--SEE EXTRA SHEET--

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

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

-*- Continuation of: Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet) -*-

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: Claim 1, directed to a plug-in wellhead penetrator system including means for attaching each electrical conductor to a surface cable electrical conductor.

Group II: Claims 2-9 directed to a wellhead penetrator system including a tubular mandrel, a rubber seal, a non-ferromagnetic guide, an offset coupling, a housing, a polymeric insulator block, and a transition collar lock nut.

Group III: Claim 10 directed to a method for installation of a re-useable, field available, wellhead penetrator by fabricating a pigtail from ESP cable into a cable transition body and attaching it to conductors extending the wellhead including stripping an armored cable, attaching sockets, affixing the socketed conductors, moving a tetrafluoroethylene insulator block, and locking the insulator block.

The inventions listed as Groups I-III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

SPECIAL TECHNICAL FEATURES

The invention of Group I includes the special technical feature of a plug-in wellhead penetrator system comprising:

- means for attaching each electrical conductor to a surface cable electrical conductor; and,
- a sealed non-conductive electrical conductor protective sleeve providing means for connecting the enclosed plurality of electrical conductors extending from the well to the surface electrical conductors;

not required by the claims of Groups II and III.

The invention of Group II includes the special technical feature of

- a tubular mandrel insertable in a wellhead providing threads on an upper end extending from the wellhead permitting the passage of a plurality of electrical conductors used to power an electric submersible pump through the wellhead;
- a rubber seal enclosing each of the electrical conductors inserted in the upper end of the mandrel;
- a non-ferromagnetic guide enclosing each of the electrical conductors extending from the rubber seal within the upper end of the tubular mandrel;
- an offset coupling attached to the upper end of the tubular mandrel having an internal shoulder compressing the non-ferromagnetic guide and providing internal threads to attach to the mandrel and tapered internal threads on an upper end of an offset connector;
- a housing having tapered outer threads for connection to the offset coupling;
- a polymeric insulator block providing a least three internal paths inserted in the housing; and,
- a transition collar lock nut for retaining the polymeric insulator block and a transition cable connection providing a bottom ring for locking the transition cable connection within the housing;

not required by the claims of Groups I and III.

The invention of Group III includes the special technical feature of a method for installation of a re-useable, field available, wellhead penetrator by fabricating a pigtail from ESP cable into a cable transition body and attaching it to conductors extending the wellhead comprising:

- stripping an armored cable exposing the plurality of insulated conductors;
- attaching sockets to the end of the conductors;
- affixing the socketed conductors extending through a transition collar to the electrical conductors extending from the well head;
- moving a tetrafluoroethylene insulator block to cover each of the connectors;
- locking the insulator block within the housing by screwing the transition collar lock-nut onto the housing;

not required by the claims of Groups I and II.

COMMON TECHNICAL FEATURES

Groups I-III share the common technical features of a wellhead penetrator system comprising:

- a plurality of electrical conductors extending through a wellhead.

However, this shared technical feature does not represent a contribution over prior art as being anticipated by WO 2014/185958 A1 to QUICK CONNECTORS, INC. (hereinafter referred to as QUICK CONNECTORS), which discloses a wellhead penetrator system (Pg. 1, Lines 16-20, Pg. 2, Lines 10-20 and Pg. 7, Line 19 to Pg. 8, Line 4; Fig. 1) comprising:

- a plurality of electrical conductors (119) extending through a wellhead (101; Pg. 7, Line 8 to Pg. 8, Line 3).

As the common technical features were known in the art at the time of the invention, these cannot be considered special technical feature that would otherwise unify the groups.

Therefore, Groups I-III lack unity under PCT Rule 13 because they do not share a same or corresponding special technical feature.